

A PSYCHOLOGIST'S POINT OF VIEW

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**TWELVE SEMI-POPULAR ADDRESSES
ON VARIOUS SUBJECTS**

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PREFACE

THESE semi-popular papers cover an exceptionally wide field. But this at least they have in common : all are written by one author—a psychologist—predominantly from one—the psychological—point of view. And it has seemed to me that the ever-increasing interest in the psychological standpoint may justify their collection in this volume and thus their preservation from oblivion.

“ Human Improvability ” appeared in the *Bristol Medico-Chirurgical Journal*, “ Freudian Psychology ” in the *Lancet*, “ Industrial Psychology and Public Health ” in the *Nineteenth Century and After*, “ Hindrances to Output ” in *Economica*, “ Instinct and Intelligence ” and “ The Taste-Names of Primitive Peoples ” in the *British Journal of Psychology*, and “ The Beginnings of Music ” in “ Essays and Studies presented to William Ridgeway.” For kind permission to re-issue these here, in a modified and, I hope, improved form, I am indebted to the Editors of the above-named journals and to the Syndics of the Cambridge University Press.

The five remaining addresses have not appeared previously in print.

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CHAPTER I

HUMAN IMPROVABILITY

THE wide problem of human improvability is as interesting to discuss as it is difficult to solve. It is essentially a problem of relatively recent origin. For the notion of progress was only generally entertained when that of evolution came to be accepted. In ancient times mankind was regarded as tossed hither and thither in the grip of fate or fortune ; while in medieval times he was regarded as being perpetually steeped in sin until the dawn of a Messianic millennium.

Perhaps the greatest difficulty which confronts us in approaching this problem is that of defining 'improvement.' Unless we can clearly determine whether any change makes for improvement, how can we hope to ascertain whether or not human improvability is possible ?

I think that at the outset we may advantageously distinguish "progress" from "improvement." Every step in evolution, *i.e.*, every change making for increased differentiation of function, increased co-

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ordination of parts and increased integration of previously independent units, may be accepted as progress. But improvement implies something more—namely, “betterment.” Unlike progress, improvement is bereft of any scientific, objective criterion. We have to judge of improvement by subjective, ethical criteria. We have to ask ourselves whether the change leads not merely from a lower to a higher plane of organisation, but also from a lower towards a higher ideal. Improvement has thus a significance relative to the user of the term. What one person will regard as an improvement will not necessarily be so regarded by another. We have also to consider each change, not in isolation, but in relation to all other relevant changes and in relation to the total environment, if we are to regard it as an improvement.

The prevailing current biological view is that all changes in living form and function are evoked by accident and are perpetuated by heredity and by their suitability to the environment. On this view we might regard improvement as consisting in a more perfect adaptation or adjustment to our environment, both physical and social. Certainly in the conquest of disease, in the discovery and introduction of more highly sanitary conditions, we of the modern Western civilisation may, in this sense of the word, be said to be “improving.” But improvement from this aspect may be accompanied, as we are all aware, by deterioration from another, *e.g.*, by the increased survival of the less fit and the unfit. Yet here once again we have to turn to the reverse aspect: the greater care of the infirm may imply a social, moral improvement,

in developing the "instinct"—shall we call it?—of protecting the weak and in reducing the sway of ruthless selfishness and of brute force.

This notion of social improvement leads us to yet another conception of improvement—as measured by the extent to which we carry out in practice our moral rules and ideals. Codes of morality may vary from age to age, according to social environment and other factors. May not the true criterion of social improvement be not merely the nobility of our moral ideals, but also, and rather, the extent to which we succeed in putting them into actual practice?

If, finally, we bring together two of these different meanings of improvement which we have been considering—the idea of improved social evolution on the one hand and that of improved adaptation to environment on the other—we are confronted with the following conceivable situation. There may gradually be evolving a state of society so complex, so exacting, so strenuous and so full of conflicts that man may be unable to adapt himself to it as he did in the easier, slower life of centuries ago. He may ultimately be destroyed by the weight of his social environment, just as perhaps the huge dinosaur perished through its own unwieldiness. So far from progressing and improving, man may be forced to revert to simpler conditions for his own salvation.

It is possible, however, to hold quite another view of the determining conditions of progress and improvement. Many find it difficult to believe that the evolution of species has occurred through purely accidental variations in the germ plasm and in

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consequent structural and functional progress, better fitted to life's environment. To them it seems as necessary to invoke the presence of some unknown direction and purpose or end throughout evolutionary progress as it is to invoke direction and purpose or end in accounting for the composition of one of Shakespeare's plays or of Titian's pictures. The creation generally of new forms of organisms seems to them to be as impossibly accidental as the creation of masterpieces of art or as the discoveries in physical or biological science. According to this view some unknown direction, purpose, or end is inherent in the history of the universe. It is a view which almost inevitably leads to a belief in general, and particularly in human, improvability.

But such a faith, however robustly held, is hardly adequate for a satisfactory solution of this problem, especially in a scientific gathering like that which I am now addressing. I think that you may be interested in hearing an account of my own experiences among primitive peoples in relation to the problem of human improvability. If we consider the most primitive peoples alive to-day, we cannot fail to be struck with the elaborate social institutions and regulations governing and restricting their life and conduct. The old idea we used to entertain of the greater freedom of the savage compared with civilised man turns out to be false. No one among ourselves is so fettered in his actions as primitive man by the dictates and authority of social and religious tradition and custom. Our liberation from such of them as are now judged useless or harmful, and have vanished through disuse,

is surely one of the improvements effected by modern civilisation.

Over thirty years ago I took part in an anthropological expedition to the islands of the Torres Straits, lying north of Australia between it and New Guinea, and to Sarawak in Borneo, where we made a study *inter alia* of the mental powers of these peoples. The differences we found between them and civilised peoples as regards intelligence did not impress us as being appreciable. In those days intelligence tests were not available. But even if they had been in vogue they would have proved useless, for the results of intelligence tests can only be compared when they have been applied to individuals who have been born into and have grown up in the same social environment.

I have been told that some years ago the Americans attempted to prove the inferior intelligence of the Japanese by applying American tests of intelligence to Japanese children in Hawaii. The Hawaiian Japanese retorted by framing and standardising tests of intelligence suited to Japanese, instead of to American culture and civilisation. By applying these tests to American and Japanese children, they had no difficulty in proving that the American intelligence was inferior to the Japanese. Even within the United Kingdom the same intelligence tests are not strictly comparable, say, between England and Scotland. So much depends on conditions of environment, education, etc.

Nor would the results of any tests we may devise to-day for intelligence be comparable with the results

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of the same tests applied to the same community one hundred years ago or one hundred years hence. Each generation has a language of its own, an education of its own, an environment of its own. And as no tests can be devised which are independent at once of language, of knowledge and of manual actions indicative of the exercise of intelligence, we are powerless to determine by scientific methods whether intelligence is improving within the same community from one century to another, or whether it is at the present day higher in one community, nation, or race than in another.

Let us return now to our Torres Straits islanders. This expedition of which I was a member examined *inter alia* the differences between the natives of the Torres Straits and Sarawak and peoples of our own civilisation as regards sensory acuity—keenness of sight, hearing and smell, for instance, and sensitivity to pain. These (with the exception of the last) turned out to be relatively slight. The wonderful stories brought back by travellers as to the extraordinary visual powers of the savage seem attributable merely to his far more intimate previous knowledge, which enables him to interpret dimly-seen objects with a correctness which seems marvellous to the less expert European stranger. On Murray Island in the Torres Straits lived one white man, a Scottish school teacher, who gave instruction to the native children. In arithmetic I found him teaching them such now antiquated subjects as “practice” and “parcels.” He told me that his pupils did rather better in arithmetic than corresponding children in Great

Britain, and this despite the fact that in their own language the Murray islanders possessed only two words for number—"netat" for "one," and "naes" for "two." "Three" was expressed by "netat-naes" (one and two), four by "naes-naes" (two and two).

Such results may make us at first sight, at least, wonder whether savage peoples would not reach the mental levels of more civilised people if only they were born in the latter's civilisation. For there can be no doubt that both animals and plants may quickly alter when removed to a new environment, and that there is a wider range of possibilities than has been hitherto generally supposed in the development of what is inherited by the organism, the precise nature of that development being determined by the nature of the environment to which it is subjected. Changes in food, soil, temperature, humidity and the like affect the final result of an organism's physical development. May we not suppose also that man's mental and moral development depends not so much, or at all events not merely, upon what is inherited, as upon the relation between that inheritance and the physical and social environment in which the individual grows up? How often do we ascribe the moral defects and delinquency of a young person to the fact that he never had a fair chance of living decently! May we not entertain the view that man's improvement is largely due merely to a certain innate *improvability*, the precise expression of which in turn depends on the environment in which he grows up?

During a subsequent visit to South and East Africa I had the opportunity of several talks with

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Europeans whose lives had been largely spent in teaching the coloured races there. With surprising unanimity their opinion was that, given equal opportunities, their coloured pupils promised to equal the achievements of any white population. They were vigorous in their denial that there was one education needed for the negro, another for the European. For them negro and European possessed equal mental capacity and equal powers of achievement, given equal opportunities of development and environment.

Against this view must be opposed the oft-quoted experience as regards the negroes in the United States. Despite several generations of education, not a single pure-blooded negro has achieved anything approaching first-class greatness, so it has been stated, judged from the white man's standards. Booker Washington and other similarly eminent coloured individuals have had white blood in their veins. To this, however, it may be objected, first, that there are so many negroes in the United States who are not pure, and consequently that we should not be surprised that those who succeed are not pure ; and in the second place, that the environment in which they grow up and are educated fails to give them an opportunity equal to that enjoyed by white persons. They are taught by less efficient, often coloured teachers, grow up amid negro traditions and in negro society, and are regarded with aversion and ostracism by those whose civilisation and culture they are expected to adopt.

On the other hand, the force of heredity and the impossibility of radical change in what is inherited must not be neglected. Nothing will stop true genius

or the really criminal mind from asserting itself, whatever be the environment against which it may have to struggle. This is as certain as the fact that the very best education is powerless to change the innately mental defective into a person of even moderate intelligence. Why, then—we may well ask—is it that despite all the disadvantages under which he labours, a pure-blooded negro has not occasionally arisen who has equalled the highest genius of the white race in scientific discovery or in artistic creation? Are we not bound to conclude that, however nearly alike may be the average abilities of two such different races, they differ, at all events in the extent of exceptional ability or in the temperament and character which permits of the best use of their ability?

Long-standing differences of climate are doubtless largely responsible for the differences in colour between the black and white man and for the other physical and the temperamental differences between them, and between one European nation and another, and for the differences between their social institutions and culture. Can we, therefore, expect a relatively quick adaptation of a member of the lower races or of any other civilisation to our own civilisation, any more than we can expect a rapid change of his skin colour from black or brown to white?

On the other hand, why should one primitive race or people remain apparently stagnant or show decadence in social conditions, whilst another steadily develops a civilisation rich in scientific discovery and in general cultural progress? Must this not be largely due to the influence of changes of climate and other features

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of environment in producing, selecting and stimulating those most fitted to contribute to social progress, especially by developing such internal secretions and consequently such temperamental, intellectual and moral characters as are best suited for initiating and accepting such advance ?

For my part, I cannot but believe that there are profound racial mental differences which have thus produced, and been maintained by, cultural differences, and that these racial differences will persist long after attempts have been made, as modern civilisation is now attempting, to bring all races under the same social environment. And I believe that these differences between white and coloured peoples constitute generally an improvement in the former, in so far (according to our original definition) as they relate to a higher culture and to a higher moral.

Let us now turn to another aspect of the problem, the changes occurring in our own race and civilisation. We are often told that the present age, so far from being one of improvement, is an age of degeneracy, or that it is at all events an age which should be replaced—and replaced profitably—by some previous one. For my part I see much confusion of thought and personal prejudice in such a view. Transitory reverses in moral conduct are here regarded as evidence of permanent deterioration. The present lessened prospects, comfort and happiness of those who previously enjoyed light taxation, loyal and contented servants, large houses and estates, naturally blind them to improvements occurring among the large masses of our modern people. They think only of the vulgar

manners and of the refusal to shoulder their own old responsibilities which they see (temporarily, as I maintain) among the *nouveaux riches* who have supplanted them.

The good old days, like the good old Christmas weather, must be regarded largely as a delusion. Neither will withstand any approach to exact inquiry. The monotony involved in modern industrial conditions and the evils of mass production are largely exaggerated, and, indeed, are relatively negligible in comparison with their compensatory advantages. Compare the conditions under which manufacture was once conducted in insanitary cottage homes with the present conditions of the most progressive, well-lighted factories, where welfare work and the investigations of the industrial psychologist and physiologist are in full swing—all directed to ensuring the greater physical and mental comfort of the worker, to reducing needless worry, irritation, boredom and strain, and to placing the worker in that kind of occupation for which he is mentally and physically best suited. Consider what mass production has achieved in enabling the standard of living of the masses to be raised, in providing them with shorter hours of work and with recreations (*e.g.*, the wireless, the gramophone, the film, the charabanc, the motor cycle)—recreations far in advance of those which the so-called working classes of bygone generations could afford, desire, or even conceive for themselves.

True, it is said, and perhaps some of you will insist, that mass production and mass education destroy individuality and reduce us all to a common standard

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of uniform inferiority. But I maintain that this view is—in the long run—a mistaken one. Not long ago the maker of some of the finest modern tapestries now produced in this country told me that his designs were frequently being imitated in Germany and sold there cheaply as copies of his own designs; but to my surprise he added that these advertised imitations really helped the sale of his own choice products, inasmuch as whenever a German had acquired enough wealth he preferred to buy the genuine British article in place of the cheaper, inferior mass-production copy of it already in his possession.

So it is, I hold, with the mass production of music by gramophone records or by wireless. The concert halls have not thereby suffered: that is generally admitted. You may not infrequently hear the street-boys of to-day whistling high-class music. Not long ago I heard a young barman at a small remote country inn singing an air from one of Saint-Saëns's operas. And when I asked him how he had come to learn it, he told me that he possessed a gramophone record of it. So it is too, I believe, with the cinema films; they offer an inducement to those of the working classes who are endowed with the best taste to exchange mechanised for living artistic productions and to visit good plays at the theatre.

Compare these mechanised products, however deplorable they often are, with the recreations available for the bulk of our people two or three generations ago. Remember, too, that good taste abounds in every social stratum, as in every level of civilisation, awaiting only encouragement for its exercise. Many years ago

I used occasionally to help the late Canon Barnett by attendance at his annual exhibition of modern paintings in Whitechapel ; and almost invariably I observed the largest crowds of these East-End workers congregating around the best pictures, *e.g.*, those of Watts, Millais and other first-rate artists of the day. Only a short while ago I heard of a poor working lad who was so impressed with some Bach music which had been played to him and his friends that he asked whether they could not themselves form an orchestra in order to play Bach music.

Mass production may produce temporary ill-effects ; it calls, for instance, temporarily in factories for armies of machine-feeders engaged on the most monotonous tasks ; and by replacing much human labour by machinery it increases unemployment temporarily. But presently production is cheapened ; the demand for the product is increased ; and the number of workers needed may rise by leaps and bounds. And presently the dull work of machine-feeding is itself performed mechanically, and the demand increases for a larger supply of machine-minders—*skilled* workers to look after the increasing number of machines. Ultimately more machinery means a greater demand for skilled workers and the abolition of severe physical or tedious labour of a type that is fast becoming regarded as unfit for civilised humanity. So it is, too, with the mass production of clothes. First it raises the standard of living, enabling those to buy articles who could never before have afforded them. Next it enables those possessing taste and an adequate income to demand articles of better manufacture, greater indi-

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viduality and artistic merit, who in former days would never have had the opportunity of doing so.

The same holds for the mass provision of educational facilities. These are at present far from perfect, for the existence and the demands of individual mental differences in the general community have not hitherto been adequately recognised in our schemes of education. Yet who but the incompetent, who realises that he has no right to his own social position, feels insecure in it, and wishes, therefore, to keep those born within a lower social stratum "in their right place"—who else can doubt the ultimate value of systems of more widely-spread, better education, if only it be properly and variously adapted to the mental abilities of the recipients? Wild, ill-considered, revolutionary ideas must arise in the early phase of the education of any mass community—just as they arise during the youth of any individual of ability receiving the very best conceivable education. They are indicative merely of commencing thought and liberty of thought.

The present age is often designated as irreligious, but in reality there was never so much thought so widely given to religious problems as at the present day. What has diminished is only the servile, thoughtless adherence to long-accepted religious formulæ, dogmas and practices.

No, I firmly believe that in conduct, in sympathy for our fellows, in refinement, in self-control, in grade and independence of thought, and in ideas of social service we are as a community, as a civilisation, definitely improving, despite certain set-backs which are, to my mind, merely of a temporary nature, com-

parable to the transitory, depressing effects of a medicinal remedy which ultimately leads to a vast improvement in physical health. One has also to take into account certain changes in fashion which, whether for the better or for the worse, are not essential or permanent features of our mental and moral progress. Further, we have to recognise that changes for the better can never be wholly free from accompanying changes in certain other directions for the worse. We have also to recognise that, deeply as we may regret the passing of certain attractive features of bygone days, we cannot reverse the march of events, any more than we can hope to give up machinery and revert to the hand-manufacture of articles which was only possible when our population was smaller and the masses of them had to be content with far fewer demands and with a far lower standard of living.

Never, as to-day, has each of us approached to so full a knowledge of himself and to so far better an appreciation of the standpoint, the ideas and the feelings of his fellows. The desire and the readiness for fighting between classes, between capital and labour, are perceptibly on the decrease, just as they are between at least the older European nations. Fighting is but the crudest, most primitive form of competition. The total abolition of competition, in its more advanced form at least, is at present unthinkable and undesirable. It is only wasteful, extravagant competition that needs to be suppressed and tends already to be disappearing, alike nationally and internationally by what is called industrial rationalisation.

Must we infer physical and mental deterioration if,

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as individuals and as a nation, we abandon the more primitive forms of struggle for existence ? If deterioration occurs in certain directions, are not improvements equally inevitable in others ? And if, returning to our opening considerations, we ask how far these are real improvements in the nature of man, and how far they are due to the response of man to improvements in his environment, and would disappear if man were transplanted to a lower civilisation—if, that is to say, we ask whether man has undergone any intrinsic improvement, and if so in what directions and how far—we may, I think, indicate our general position in the following conclusions :—

(a) That in many respects we are vastly improving.

(b) That in many respects, perhaps in all respects within a particular race or people, these improvements do not arise broadly and directly from the fact that most members of that race or people are innately improving, but rather from the fact that the social heritage, the civilisation into which they are born is improving.

(c) That the causes of improvement in the social heritage are ultimately due to improvements in a few "leading" individuals, for which their physical environment is, in part, responsible.

CHAPTER II

PRINCIPLES OF DEVELOPMENT

IN the development of a living organism we can recognise three main lines of advance. Of these the first may be called *accrescent*. It consists in "growth"—the mere accretion of the new to the old. Just as the lifeless crystal increases in size by enlarging its surfaces, so the living flower matures by unfolding and magnifying the miniature contents of the bud, without any serious change in its formal character. This process of growth is an essential accompaniment of the changes which occur during the progress of the individual from infancy to maturity. On the other hand, during the period of involution, *i.e.*, with increasing senility, this same process of growth retires further and further into the background, as the aged individual becomes wasted and wizened.

The second line of advance may be termed *analytic*. By what is called "differentiation," a blurred, confused whole gives birth to a number of well-defined, distinct components: a single unit develops into several more or less independent sub-units.

The third line of advance may be called *integrative*. It consists in the fusion of separate, successively appearing units so as to form a new and more complex single unit.

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As an example of mental development, let us take the development of colour sensations. Are we to suppose that in the life history of the individual or of his genus, sensations (whatever they are) are merely integrated with one another, so that to the growing infant or to the evolving vertebrate first come, say, colourless sensations, next are added, say, yellow and blue, and finally come, say, red and green? Or are not the later, more varied, sensory experiences derived from the older by progressive analysis and differentiation rather than by successive creation and integration? In other words, are we to liken the development of colour sensations to that of colour photography, where for a long time a stage existed in which the plate would only yield a colourless negative, until finally a series of chemical substances came to be employed which made the plate successively and differentially sensitive to red, green and blue rays? Or should we not rather turn for our simile to the lens of the camera, which when "racked out of focus" throws on the screen a confused colourless image of the landscape, but which gradually reveals different colours in increasing detail as the landscape is brought into clearer focus?

Are we in the same way to suppose that, in arriving at the perception, say, of an apple, the infant first separately acquires the individual "sensory" experiences of redness, roundness, hardness, sweetness, and then combines them so that he "perceives" the object? Or is it not more likely that the perception of the object is given, vaguely of course, from the start, and that only with the development of mind and of experience do

these apparently simpler sensations of vision, touch, etc., become differentiated as such ?

Applied to languages, the notion that development consists primarily in the integration of new elements with old, and in the formation of more complex units from earlier simpler ones, led once to the weird conclusion that we can never meet with a civilised language which is developing, or becoming more perfect. For inasmuch as in historical times grammatical changes have been largely in the direction of simplification, the general movement of language may be considered as now retrograde. So Schleicher,¹ who was largely responsible for this view, went so far as to insist that a veritable antagonism exists between language and history, and that the period of evolution of language is limited to pre-historic, pre-literary times. The same notions that simplification spells degeneration and that in its evolution language started with the simple and proceeded to the complex, led the majority of philologists in the past to suppose that language took its origin from monosyllabic roots—such as mainly constitute the Chinese language of to-day—that it passed from an “isolating” stage, through an “agglutinative” stage in which grammatical elements were added to the roots as more or less distinguishable and separate formations (as in Tibetan), finally reaching the “flexional” stage in which (as in Latin and in older Aryan languages) these formal, grammatical, elements are found in inseparable combination with the roots.

We have good reason now to believe that languages have always tended to develop in precisely the opposite

¹ “Ueber die Bedeutung der Sprache u.s.w.,” Weimar, 1863.

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direction—namely, from flexion and agglutination towards flexionless isolation. We know now that Chinese, with its wholly monosyllabic words, was not always so simple. Modern languages are characterised by features simpler, more concise and more uniform than those of older languages. It was only in the less primitive stages of language that the different parts of speech began to be separately distinguished, relatively undifferentiated wholes giving place to a number of simpler and independent units. The flexibility gained by such simplification as the abolition of inflexion is enormous. Thus in the words "I was loving," which replace the Latin *amabam*, each element is recognisable, and accentuable at will. The order may be changed so as to allow of change of meaning, and words may be interposed between these separate parts.

Accordingly, we tend to a conclusion which, I believe, is far from being shared by all modern philologists, but which is precisely similar to the principle on which, as a psychologist, I am here insisting. Spoken language does not begin with roots any more than the experience of an object begins with that of pure sensations. "Roots," one philologist has well said, "are not natural entities, but investigators' hypotheses." "A root," according to another, "is only something imaginary, an abstraction." And similar results would follow the consideration of the evolution of written language—of letters from hieroglyphs and pictographs—of grammar, and of musical scales.

I turn now to the evolution of design in art. In many cases the origin of the simplest patterns can be traced from the most complex designs—e.g., from

designs of human, animal and plant forms.¹ These examples show the gradual development of simplicity in design from a more complex and undifferentiated past. Of course one must not conclude that *all* simple patterns have originated in this way. Some, for instance, may be traced to plait work, others to similarly simple designs which occur in nature. What I wish to point out is that design proceeds generally by the gradual omission of parts of the original *complex*, by the elimination of the needless, so as to reach an apparently *simple* result which, were we in ignorance of its long ancestry, we should deem basic and primary.

Let us then avoid speaking of such developments, whether they occur in mental experience, in language, in writing, or in art, as degeneration. It is characteristic of the creative mental activity of a genius to simplify his "inspirations," to make his work as epigrammatic as possible, before communicating it to his fellows. To differentiate the vague complex, and to drop the useless are the essentials of evolution.

It seems to me that very much the same views in regard to thought and religion are to be found admirably expressed in his "Studies of the Greek Poets,"

¹ Compare the belt patterns from the Gulf of Papua composed of human face derivatives (in A. C. Haddon's "Evolution in Art," Contemp. Sci. Series, pp. 10-19), the crocodile arrows from the Fly River district in New Guinea (*ibid.*, Fig. 6), the snake and lizard arrows from the same district, the frigate bird's head and neck motive in the scroll patterns from the Massim district of New Guinea (*ibid.*, Figs. 24-31), the combination of bird and crocodile in the same district, the lotus flower in Egypt, Greece, etc. (*ibid.*, Figs. 73 *et seq.*), the crocodile, etc., in the Malay Archipelago, the alligator, lizard, snake, locust, etc., among the American Indians (*ibid.*, Figs. 91-103).

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by John Addington Symonds. "The theory of development which seems to underlie the linguistic doctrine is that thought in its earliest stage is positive and clear and adequate. . . . The fallacy in this view appears to lie in attributing to the simple and sensuous apprehension of the savage the same sort of simplicity as that which we have gained by a process of abstraction. . . . The truth seems to be quite the contrary. If we grant for the sake of argument that the first thoughts are in a sense simple, they have nothing in common with the generalities of the understanding. Except in relation to immediate perceptions, their generality is empty until it has been filled up with the varied matter of the senses and the imagination. Mythology and poetry are therefore an advance on the primitive power of simple apprehension. What was a mere round ball becomes a *dædal* world; and it is not until the full cycle of the myth-creating fancy has been exhausted that the understanding can return upon a higher level by abstraction to intellectual simplicity. The same is true about theology . . . ; the germ of thought by unfolding its potentiality showed that what had seemed a barren unit was a complicated organism with a multiplicity of parts. It remained for a further stage of thought, by reflection and abstraction, to return at a higher level to the conception of intellectual unity. What we have to guard against is the temptation to attribute our own abstractedness, the definiteness of positivism, the purity of monotheism, to the first stage of thought."

An example of the opposite concept in regard to religious evolution is afforded by the views of the

anthropologist, the late Professor Tylor. He held¹ that animism, the doctrine that natural phenomena are "animated" by a spiritual essence, appears more consistent and logically more satisfying, the nearer to its source we are able to trace it. Starting from what he conceives as its primitive form, it grows by being complicated with new elements until finally it becomes embarrassed and obscure. Originally, according to Tylor, animism was perfectly clear, because it developed directly from the naïve reflection of the savage philosopher in the presence of facts that demanded explanation.

A critic of this British school of anthropology, M. Lévy Brühl, has pertinently asked: "Were there ever such savage philosophers? Do the collective notions of the soul, in primitive communities, constitute a sort of doctrine born of the need to resolve biological problems? Nothing is more doubtful. . . . In fact, almost everywhere where observation has been sufficiently prolonged and minute, we have to renounce the happy simplicity of one and the same soul manifested at once as vital principle on the one hand and as phantom on the other."

Indeed, elsewhere M. Lévy Brühl goes so far as to conceive that the minds of primitive and advanced peoples are fundamentally different, and that it is therefore impossible to express the experiences of primitive communities in terms of our own. "Their mental activity," he argues, "is too little differentiated for it to be possible to treat of its ideas or its images of

¹ "Primitive Culture," 4th Edition, 1903, i., 428-429. London: John Murray.

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objects apart from the sentiments, emotions, passions which those ideas and images evoke. . . . Just because our own mental activity is more differentiated, and also because the analysis of its functions is habitual to us, it is very difficult for us to realise, by an effort of imagination, more complex states when the emotional and motor elements are *integral parts* of representations." Thus, according to M. Lévy Brühl, this process of simplification by differentiation or analysis may actually be traced in the differentiation of human feeling, action and knowledge from savagery to civilisation.

It may be said that these examples, taken from the evolution of sensation, perception, language, art, thought and religion, all have reference to the evolution of *mind*. And it may be argued that although *mental* evolution may be characterised by this differentiation, this carving, of simpler factors out of the more unitary complex, nevertheless the same process may not be of equal importance in the evolution of living and lifeless *matter*—i.e., in organic and inorganic evolution.

On the contrary, I believe that all evidence concerning the evolution of lifeless and living matter only serves to emphasise the importance of this aspect of evolution. How have the chemical elements been evolved, unless by a differentiation of simpler uniform units out of more complex diverse ones? To what do the conceptions of Mendelism lead us but to the conclusion that many new inherited characters must have arisen by subdivision of earlier ones? Do we not find in such a lowly organism as the *amœba* all the fundamental processes which are clearly distinguishable and specialised in the higher forms of life? Everywhere

the vague complex whole precedes the more definite simpler parts. What is distinctive of the latest product may be dimly discernible in the earlier products of evolution.

In order to throw into still higher relief that view of evolution which I am now urging, let me direct the reader's attention to the standpoint of one of our best known evolutionary philosophers, Herbert Spencer. For him evolution consists *essentially* in the addition of matter to matter, *i.e.*, in increasing integration and diversity—not so much in progress from the complex to the simple. As examples of organic integration, Spencer cites ¹ the coalescence of bones ossified from separate centres, *e.g.*, the sacral vertebræ, into a single whole (p. 250). As examples of superorganic integration, he cites the alliance between weaker nations in order to resist a stronger nation (p. 254), “the junction of Manchester with its calico-weaving suburbs, the concentration of corn-merchants about Mark Lane, of civil engineers in Great George Street, of bankers in the centre of the city” (p. 255). Spencer concludes: “Evolution, then, under its primary aspect is a change from a less coherent form to a more coherent form, consequent on the dissipation of motion and integration of matter” (p. 262).

From this view I strongly dissent. In its primary aspect, I maintain, evolution consists not in integration, not in adding new parts to form a more complex whole, but in breaking up, in differentiating, a previously complex whole into simpler, more or less

¹ “First Principles,” in 2 vols. Popular Edition. London: Williams & Norgate. 1910.

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independent parts. Spencer later admits that the statement I have last quoted "is by no means the whole truth" (p. 291). His "formula finally stands thus: Evolution is an integration of matter and concomitant dissipation of motion; during which the matter passes from an indefinite, incoherent homogeneity to a definite, coherent heterogeneity; and during which the retained motion undergoes a parallel transformation" (p. 321). I hold that *integration is not the primary aspect of evolution*. What is primary is the "carving" of new parts out of the old. The old may *grow* in the process; it may and does by *accretion* add new material to itself. It also *combines* into larger units by union with others. But evolution does not depend so fundamentally on the accretion of new elements; it depends rather on the differentiation of the new out of the old. Such new units were not originally wholly dependent of one another; they have not generally combined later into more complex wholes. They have been rather formed by differentiation from a lower whole and were never disunited from the more complex and higher wholes thus formed through differentiation.

How these new and separate parts of an organism have been "carved" out of the original block of living substance, in what sense the new may be said to be contained within the old which has given rise to it, how far the carving of the new arises mechanically from the operation of changes in the environment on the cells of the organism, whether in addition to purely mechanical factors a teleological or guiding principle must be involved—these are wider problems on which

it is impossible for me even to touch here. I am content to have directed attention to what is, as it seems to me, a very important and fundamental aspect of regarding development—important and fundamental because it necessarily underlies and determines our general attitude towards the nature of mental evolution.

CHAPTER III

EDUCATION AND VOCATIONS

I HAVE often complained that everyone, whatever his training and experience, thinks himself qualified to speak on educational and psychological problems. And now—addressing a conference of teachers—I feel that I am hoist with my own petard! For my experience as a teacher has been narrowly restricted to University lecturing, and my position as Principal of the National Institute of Industrial Psychology has involved merely the general supervision of its Vocational Section, the activities of which have been in practice due to the able work of its successive superintendents, Cyril Burt, F. M. Earle and Angus Macrae. My readiest excuse is that the subject of my address was chosen *for* me not *by* me, and that I accepted it with the determination to treat it mainly from the standpoint of the education which I have *received* rather than from that of any education which I may have tried to *impart*. Let me then summarise the features of my own education.

I was trained for the medical profession. After receiving a “classical” education (about which I shall have something to say later), I was taught physics, chemistry, botany and zoology. From this introduction to the facts of the physical and biological

worlds I passed to the narrower study of the anatomy and physiology of normal man. Thus equipped, I began my clinical experience, receiving at the same time instruction in medical and surgical pathology, pharmacology, surgical anatomy and the methods of medical and surgical practice. When I look back on this scheme of education, its plan and purpose seem simple and logical enough, viz., to give the medical student a preliminary broad knowledge of animate and inanimate nature before introducing to him the study of the functions and structure of the living human body, and to familiarise him with the normal conditions of life before he advances to the narrower details of altered function and structure due to disease and injury, and before he learns the methods of remedying such disturbances.

But when I look back to a much earlier stage of medical education which had ceased to be in vogue long before my day, I seem to recognise quite a different scheme, in which the embryo doctor or surgeon began his instruction as a working apprentice and had during and after that period to pick up and extend his knowledge of methods and principles as best he could.

Such has been the course of evolution of education in the case of all the professions. Vocational education began as a process of broadening out from the basis of an originally narrow, central, working experience ; whereas now its main feature consists in proceeding from an originally broad scheme of instruction to a narrower professional centre. In other words, the "centrifugal" procedure has been now replaced by

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the "centripetal." This is happening gradually in the case of all occupations. The initial acquisition of technical skill, followed by the learning of such a modicum of theory and principles as may be picked up in continuation schools and evening classes, is giving place to the learning of far more general principles and a wider array of facts before the acquisition of skill begins.

Every vocation is to-day a more or less skilled vocation. Wherever there are right and wrong methods of carrying out an operation (even, for example, in the humble art of throwing refuse into a dust cart), skill enters. And where skill is involved, vocational training is possible—and desirable. But the notion of vocational training as consisting in drilling a person in "the one best way" of behaviour has always been combated by the industrial psychologist. There *is* no one best way of carrying out work; there are many equally *good* styles differently suited to different workers, and there are undoubtedly *bad* methods and habits from which the beginner has to be safeguarded. Modern training, therefore, even for the lowest-level occupations, does not consist in forcing people into a common mould, but depends rather in recognising diversity of method, and hence in imparting some knowledge of the general principles that determine good and bad methods of work.

But the ability to grasp general principles must depend on the degree of intelligence of the pupil. A mentally defective person can only be drilled into repetitive work like an animal, nay rather like a machine; and similarly a dull, stupid person can

have little interest in general principles. They can only be grasped by those who have been able to receive and to take advantage of a fairly wide pre-vocational education conveying general and abstract ideas. And how wide that previous education has been must depend again on the general intelligence of the individual, and again, of course, on the level of the vocation which he will be fitted to enter. Let me give you an example of how even within any one occupation—that of the shorthand-typist—various levels of occupation exist, dependent largely on the degree of general intelligence involved.

My Institute has ascertained that an intelligence quotient¹ of 105 barely suffices for typewriting, and then only for copying work ; that with an intelligence quotient up to 120 routine typing is possible, but shorthand will be lacking in speed and accuracy, while spelling and display will be defective ; that with an intelligence quotient lying between 120 and 135 good shorthand typists may be expected, possessing the ability, towards the upper limit of this range, to compose a satisfactory original business letter ; and that those whose intelligence quotient exceeds 135 are fairly certain to be discontented with routine work unless soon promoted to posts of responsibility.

Similar broad differences for different occupations occur throughout the whole range of vocations. A member of the higher professional class needs an

¹ A 12-year old, who in the intelligence test reaches the level of an average individual of 15 years, is said to have an intelligence quotient of 125. In other words, the intelligent quotient

$$= \frac{\text{the mental age} \times 100}{\text{the chronological age}}$$

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intelligence quotient exceeding 150; the highly technical person needs one between 130 and 150; the highly skilled, between 115 and 130; the skilled between 100 and 115; the semi-skilled (*e.g.*, those taking up metal-work or wood-work) 85 to 100. In such a vocation as that of engineering, we have at least the professional, the highly technical, the highly skilled (*e.g.*, the foreman, machine inspector, pattern maker), and the skilled (*e.g.*, the fitter, the turner) workers.

I do not mean, of course, that general intelligence, or general ability, is the *sole* determinant of the choice of an occupation. It depends, as we all know, also on

- (a) special abilities, mental and physical; these, like general ability, are largely determinable by appropriate tests;
- (b) temperament, character, interest and ambition;
- (c) social and family considerations.

It must not therefore be supposed that vocational guidance can ever be based merely on the application of mental tests. Like medical advice, vocational advice can only succeed if it surveys and takes into account a vast number of complex, complicating conditions. Medical and vocational guidance—each is to be regarded as an art rather than as a science, but as an art based largely on scientific procedure and also on a sympathetic knowledge of human nature.

I have now said enough to support my contention that it is absurd to talk simply of education for a given vocation. We need to classify and separate (and in the case of the engineering vocation we do already

separate) those who have chosen a given vocation according to the level of their intelligence, and to give them a different vocational preparation. To give all typists the same vocational education, whether their intelligence quotient be as low as 105 or over 135, is alike wasteful and harmful ; and the same applies to many other occupations. We must differentiate early between the various "honours" and "pass" levels.

We are all agreed that a similar differentiation must take place in *pre*-vocational education. The new scheme described in the Hadow Report places this differentiation henceforth universally at the age of eleven. After eleven, all children are to receive different kinds of post-primary or secondary education. Before they are eleven years old, all children, whatever their intelligence, are, I understand, to be taught together, so long as they are not dull and backward or mentally defective. But we shall surely soon come to recognise that, on the whole, all pupils will similarly benefit by the earliest possible recognition and special education of the mentally brilliant or super-normal.

I do not deny the existence of "late developers." But I feel convinced that their number is smaller than is supposed, and that it will lessen as our educational methods improve and as the causes of early inhibitions are diminished. And I am sure that we shall realise more and more fully the importance of recognising not only the abnormally dull, but also the abnormally brilliant, at the earliest possible stage, and of giving to each of these groups and to the pupils of fairly average general ability different schemes of education rationally fitted to their different levels of ability.

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I differ from those who would keep all children, irrespective of their intelligence, at school until they reach the age of fifteen. For of what use is this extra year to those whose intelligence quotient is below, say, 85, and who consequently are fitted only for so-called unskilled and casual work? The lower the grade of occupation, the shorter the pre-vocational and preparatory training. What I have called the "centripetal" stage becomes reduced in duration, and the "centrifugal" stage—the learning after the start of the vocation—becomes *relatively* prolonged and more important.

For generations past, employers have laid exaggerated stress on the early entry of adolescents into semi-skilled and skilled occupations, pleading that at a later age the necessary skill could not be acquired. They have raised the same plea again and again, as the school-leaving age has been successively raised. Two of the basic ideas of our earliest schools for the poor was to provide them not merely with instruction in the three R's, but also with training in such technical operations as spinning, lace-making, cobbling, etc., so that they might earn more on leaving school and acquire habits of work and thrift; thus in these first schools the technique of manual work was mixed with abstract learning. But at the present time employers are crying out rather for workers capable of holding *higher*, responsible positions; and they are open to the charge of not taking the trouble to recognise sufficiently early, and to give special and appropriate education to, the young who are likely to be able to occupy such posts of responsibility with success. Not

all of this education can advantageously be of a part-time character.

Even if the demand for very young workers for skilled or semi-skilled work had any basis in the past, there is less and less reason for it as the growth of machinery is increasingly abolishing the need for manual dexterity of a more or less repetitive nature. It is commonly believed that the increase of machinery means a reduction in the demand for really skilled workers. By actual inquiry over a number of years Mr. Charles Renold has proved that the contrary is the case, so far at least as his own (chain-making) works are concerned. He finds that the proportion of skilled workers is ever increasing as more machinery is introduced. It is indeed obvious that the *human* feeders of machines are mere stop-gaps which will sooner or later be replaced by *mechanical* feeders, and that what will be wanted will be not more machine *feeders* but more machine *minders*—more people who are able to look after several machines, to foresee and to prevent breakdowns, people of greater intelligence, of greater technical knowledge and skill, able to assume positions of greater responsibility and importance than heretofore. In other words, the more machines are improved, the less the need for those capable of merely routine repetitive work, and the greater the demand for those endowed with powers of observation, and with some degree of foresight and of what we often call “machine sense.”

My experience is that there are numbers of “mute inglorious Miltons” in every occupation—those whose abilities have never been recognised or who for other

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reasons have had no opportunities of exercising them, and who have not the irresistible push of a genius to proclaim their powers. Once again then, I revert to the urgent need of the early detection of general and special ability and to suitable differential education. The number of those who drift into purely routine repetitive work is undoubtedly far in excess of those who are mentally fitted for nothing better. Their higher potential abilities are inhibited, or they decay through disuse, or are side-tracked into day-dreaming during their working hours.

But at what age is it possible to reach any occupational prediction? My Institute is undertaking an experiment in Fife which may help to answer this question. Here children are being first vocationally examined at eleven years of age, and this examination is being repeated annually on the same children, as they are followed up before and after they have left their elementary school for other schools in the district. By a still further follow-up we shall, I hope, thus arrive at some knowledge of the value and possibility of such early vocational examination and of the extent to which the special abilities, interests and temperament of the adult manifest themselves before puberty.

In point of fact, of course, according to the Hadow scheme, the child's future career will have to be broadly decided when primary education closes, viz., at the age of eleven. In a sense this is roughly true even for the scheme in force to-day. For at eleven, or soon after, the cream of the ability in elementary schools begins to be separated (later to be actually whipped off

to secondary and central schools) by free-place scholarship examinations held about this age. But only about 12 per cent. leave elementary schools to continue full-time education. About 75 per cent. of elementary school children leave school to take up employment. But the Hadow report recommends that *some* form of secondary education should be provided for *all* children between the ages of eleven and fifteen. It will be necessary to determine more carefully and more generally than heretofore the capabilities of the child of eleven, if this recommendation means any real improvement in present methods. The old scholastic examinations are far from adequate to detect general and special abilities of different kinds. What is needed is a teacher in each school (whether elementary or secondary) who will act part-time as a careers master (or mistress), having the children under his observation from the age of eleven onwards, collating the views of the various teachers in regard to the children's abilities and temperament, making systematic examinations of his own where these views are at variance, acquainting himself with home conditions, parental wishes, and familiar with the modern scientific principles and methods of vocational guidance and at least with the nature and prospects of the commonest and most important local occupations. Each school should have such a part-time careers master, and each district should be provided with a whole-time expert who would train and supervise the careers masters in their work, and visit the schools in his district, and be specially concerned there in the solution of unusually difficult case problems.

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That is the recommendation to which my Institute has come, after a careful follow-up over four years of 1,200 elementary school children after leaving school, half of whom had been vocationally studied by the Institute's staff and had received its advice, the other half, forming a control group, otherwise identical with the experimental group, but not having been thus examined, merely receiving the customary advice from the School Conference and the Juvenile Employment Bureaus.

The results of this long inquiry are now ready for press.¹ They fully warrant a widespread extension of systematic vocational study, on the lines pursued by the Institute. Where the Institute's advice was given and followed, there were found to be fewer changes of occupation, greater contentment on the part of the adolescent, and consistently better reports received from the employers than in other circumstances.² With the adoption of the Hadow scheme, some form of mental testing and of initial broadly vocational examination will be necessary in primary schools at the age of eleven, and later in trade schools, and in the newly termed "modern" schools and "grammar" schools, to help in classification of the pupils, in subsequent transfer to another kind of school (where necessary) and in choice of a career.

At present young people, whatever the age at which they have to enter on an occupation, have too little knowledge of its nature. The same is true for their

¹ Now published under the title of "Methods of Choosing a Career." (Harrap & Co., 1931.)

² Cf. *The Value of Vocational Tests as Aids to Choice of Employment*. (Birmingham Education Committee, 1932.)

teachers. Much could be done to bridge this gap. The seriousness of it may be gauged by the fact that of 100 young people, almost entirely from secondary schools, who have come to the Institute for vocational examination and guidance, almost exactly one half had chosen or preferred careers which were directly at variance with the advice given by the Institute. That this advice is trustworthy seems to be well attested by the published results of following them up in their after-careers and comparing the successes of those who have accepted and those who have rejected the Institute's vocational advice.¹

What, then, seem most necessary are (i) some instruction on the nature of available occupations ; (ii) some advice on the occupations suitable to individual pupils. At present, to whatever kinds of schools we turn, they contain none capable of giving such instruction or advice in a satisfactory manner, and at present there is no satisfactory provision for introducing it from outside. Yet, as we have seen, the broad determination of the kind of career will be more necessary than ever at eleven in the primary school ; so, too, the trade must be decided at about thirteen on entry to a junior technical or trade school ; and the occupation must be determined by about fifteen in the modern or central school, and in at least a general sense by sixteen or seventeen in the grammar or secondary school. Yet how many there are who proceed wastefully to the University with little knowledge and no decision as to the career suitable to them !

¹ Cf. *The Human Factor* (the Institute's Journal), 1932, vol. vi., pp. 42-52.

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This leads me to say a few words about University training for business careers. Here again we have the old fight between the centrifugal and centripetal attitudes, the former urging an early entry into commerce and industry so as to "pass through the mill" and know all the facts and technical details, the latter urging the advantages of higher culture, improved character, greater ease in talking and ability to "mix" better with their associates (I quote here from a recent statement of the advantages derived by business men from a University education).

I am not infrequently asked my advice by employers who themselves entered on their occupational career at fourteen or sixteen, and have worked up to a position of commanding importance which financially brings them to face the dilemma of sending their sons from school either direct into their works or to three years of prior University training. My reply is that the decision must depend partly on the nature of the industrial or commercial concern, but mainly on the nature, *i.e.*, the mental abilities and character, of the young man.

We are brought back to the same problem as I have previously raised. Is he capable of acquiring and profiting by general principles? Is he mainly an intellectual or an intuitive worker? Is he, or is he not, fitted to receive the widest conceivable centripetal education? We know the stress that was once laid on formal education—that it mattered little what we learned, that appropriate exercise in *any* material provided satisfactory education. So we improved our memory by learning Ovid or Virgil, we improved our

reasoning by learning theorems and problems of Euclid, and so on. We know now that this stress on formal training has less actual foundation than was once supposed. But the pendulum has swung too far in the opposite direction. The experimental methods adopted by psychologists, in order to disprove the transferability of acquired skill to other mental or manual operations, are often by no means free from criticism. They have disregarded the fact that it is not the actual *acquisition* of skill that is transferable, but the *general* attitude to be adopted for its best acquisition and use. In other words, it is the realisation and acquisition of general principles which can be applied to other different, but not too dissimilar, situations, that is of fundamental educational importance.

The more a man is capable of grasping and applying such general principles, the better he is fitted for a University education. And it is because a relatively large proportion of such men proceed to the University that University graduates are being sought more and more to fill the higher positions in industry and commerce. They are in greater demand, as rationalisation brings ever larger concerns into existence: bigger armies require bigger generals to command them, and generals of the type of the careful thinker, not merely of the type of the bold adventurer.

So far, I have purposely not touched on the question—where should specialisation in education begin? I intend neither to consider it nor to try to answer it here. But this I would say—that any occupation, *e.g.*, medicine or, shall we say, brewing, can be made to serve a sufficiently wide basis of education if it be

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broadened sufficiently. We have seen how medicine may be opened out to cover the whole of physical and biological science : medical education actually proceeds in the reverse direction. But clearly it may be further widened to include the teaching of statistics, history, ethnology, philosophy—all with ultimate reference to certain medical aspects of these studies.

In actual practice, of course, we cannot work backwards from each occupation to the wide number of possible relevant subjects. The number of special aspects of different subjects and the number of subjects would become impossibly vast. The problem would resemble one which was brought to my notice some years ago. How is it that a man's ancestors increase as we trace them back—two parents, four grandparents, eight great-grandparents, sixteen great-great-grandparents—how many ancestors a man must have 10,000 years back I will not stop to calculate. And yet, though the number of ancestors *increases* as one goes back into the remotest times, the number of living individuals must diminish if we want to get back to Adam or the first few originators of our stock !

We, too, educationally, want to get back to fewer subjects per pupil and to teach them thoroughly in all their bearings, and in the general principles which they inculcate. I maintain that far too many subjects are now being taught to young people in elementary and secondary schools for them to be taught well. They learn to be a jack of all subjects, and a master of none. How many can even cipher, read, or write, to their own satisfaction or for effective communication with others ? Their number is extremely small.

A common elementary introductory course is possible in the teaching of almost any subject, whatever the use which may be made of knowledge of that subject. Such a course can be devised to help in training the mind to differentiate, to integrate, to make deductions and to arrive at *general principles*. But, alas ! it is far easier to learn *details*, and far easier to examine in them : anyone can teach facts, anyone can mark them in an examination paper. And thus we find elementary and secondary education consisting in too great a multiplicity of subjects, a plethora of facts to be learnt, and a paucity of general ideas.

The old idea of the inestimable value of a classical education lost its force, not because the idea was false, but because the education had become essentially a vocational one. Classical education was evolved largely with the aim of enabling the ablest students to obtain classical scholarships, the papers for which were set at the Universities by those who were engaged in educating not the "general run" of students but *classical scholars*. The same error has since vitiated other substituted or additional subjects. The chemist or the biologist in planning his introductory and intermediate courses in elementary and secondary schools merely aims at training a being similarly occupied to himself. They are planned, in a word, by the professional or academic specialist. It is untrue that there is only one way of teaching a subject, whatever be the ultimate use which is to be made of it. It is true that, taught as a subject of general culture, there need only be one way of teaching it to all of broadly similar ability and interest ; but as I have urged, the specialist

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is seldom the person to plan it. When, however, that stage has been passed, the subject requires to be taught according to the needs of the student who has to acquire it. The future man of business must be taught a foreign language differently from the philologist ; the medical student requires a chemistry different from that taught to the expert chemist. I have heard complaints about the teaching of Spanish at Oxford and of the teaching of practical chemistry to medical students at Cambridge which substantiate my plea.

I may appear to have dealt only with those aspects of education which have a direct bearing on future vocation. If I have neglected those aspects which relate more particularly to the moulding of character, the pursuit of beauty and the use of leisure, my neglect is only apparent because the same position which I have here adopted is applicable. In a word, begin with only a few subjects, treat them as thoroughly and as widely as possible and teach them so as to bring a minimum of facts into relation with a maximum of general ideas and principles in so far as the pupils can grasp and appreciate them. Recognise, too, individual differences in mental and in temperamental qualities at as early an age as possible, group your pupils, and plan your training accordingly.

CHAPTER IV

SUCCESS

SUCCESS is generally defined from the *objective* aspect. It is commonly regarded as "the conquest of difficulties"; and we are usually content with such a definition. But we may also consider success from another, the *subjective*, standpoint: we shall then define it as "the realisation of one's desires." These two definitions are by no means equivalent. From an objective or external attitude we may reasonably regard one of our fellow-men as successful who, nevertheless, from his subjective or internal attitude, has not by any means realised his desires. A certain writer, for example, may seem to his fellows to have reaped success, whereas the writer himself may be far from contented with his achievements, which indeed may appear to him to have been so imperfect or meretricious as to cause him to dub himself an utter failure.

If we carry a little further this psychological attitude of defining success from the subjective standpoint, we shall be driven to be dissatisfied even with this definition of success as the realisation of one's desires. For real success implies more than the realisation of desires; it involves also the *feeling* of successful accomplishment—that is to say, *satisfaction* with the realisation of one's desires. Now it by no means follows that realisa-

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tion of one's desires is always followed by an experience of satisfaction. For one's desires develop before they are actually fulfilled, and so their realisation may prove extremely disappointing. In such cases there is no real success from the psychological standpoint, *i.e.*, from the standpoint of the individual's own personal experience. Achievement must be in harmony with the highest ideals of the total reigning personality if success is to be true and complete.

Perhaps the most important determinant of success in life is the proper choice of a career. True success is impossible if one's daily occupation is totally at variance with one's interests. Those interests may be conveniently classified as innate and acquired. They may also be classified, according as they are *directly* attached to the occupation, or according as they are *indirectly* related to it by their reference to desires for wealth, social status, etc. Innate interests are determined partly by instinctive characteristics. For example, he in whom the protective instinct is naturally strong will have his interests directed, say, to nursing, philanthropy, motherhood, horticulture or the like ; while he who is strikingly endowed with the fighting instinct will be drawn to the career of a soldier or to the keen competitive life of a business man. But in adolescence, at least, such interests are often untrustworthy because they may be inadequate or because they may be evanescent or succeeded by more potent ones. Engineering demands for its success more than an "instinct of constructiveness" ; the successful actor or dancer needs more than a strong "instinct of self-display." A more reliable valuation of interests,

in so far as they are useful in determining our careers, lies in the direction of our special abilities or talents. Thus one of us may inherit a special ability or talent for music, painting, poetry or some other art ; another may inherit mathematical, manual or mechanical ability. These, when strong enough, usually provide a potent urge in the person, and hence a particular interest in him, to concentrate his activities in a particular direction.

But interests alone are insufficient to secure success. A particular interest may be strong ; even the relevant set of special abilities may be strong ; yet failure may ensue unless the requisite character and temperament and the requisite general intelligence accompany them. Certain occupations demand much greater general intelligence than others. To press a person into one occupation who has special talents pointing to another is to try to fit a square peg in a round hole. But to press a person into a higher occupation such as medicine, whose general intelligence indicates a lower one such as that of laboratory attendant, is to try to fit a peg in a hole which it will never properly fill. The converse is equally dangerous. It cannot be expected that a man will be content and successful who is forced into a lower occupation than his general intelligence warrants ; as well harness a racehorse to a waggon.

That the character and temperament of a man may lead to his failure in one occupation but yet help to his success in another is too well-known to need insistence here. Only disaster can follow if an irritable man takes up work which demands extreme patience, if a gregarious man takes up work which has to be done

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in strict isolation from his fellows, or if a man who is fond of change falls into an occupation characterised by routine. To avoid such calamities, two things are clearly necessary—First, a knowledge of the requirements for success in the various available occupations—the special abilities, the degree of intelligence, the character and the temperament, needed. And secondly, some means of determining in the adolescent what are his special abilities, intelligence, character and temperament, and of advising him in the choice of a most suitable career.

Along these lines satisfactory progress is now being steadily made. The National Institute of Industrial Psychology, for example, after a preliminary experiment conducted jointly with the Industrial Fatigue Research Board, has been giving vocational guidance to the school-leavers in a large London district. Twelve hundred of them are now being followed up in their after-school history.¹ In the follow-up of the initial inquiry just mentioned, two years after school-leaving, the following results were obtained :—

Of those who entered occupations of the kind recommended, over 80 per cent. were satisfied with their work, prospects and pay. On the other hand, of those who entered occupations different from the kind advised, less than 40 per cent. were satisfied, and most of these apparently based this satisfaction rather on the excellence of their employers than on their liking for the work. Further, those who accepted the advice given them not only had fewer changes of position, but were in receipt of higher pay. Thus, so far as

¹ Cf. page 38 and first footnote.

personal satisfaction, permanence of occupation and higher wages are indications of success, the value of improved vocational guidance in facilitating success is fairly established.

The Institute is doing similar work in a Scottish rural area and is helping Educational Authorities elsewhere. The Institute has also instituted vocational guidance at the request of the Home Office in Borstal Institutions and has carried out investigations on the subject at the request of the War Office at a centre where lads are being trained in suitable trades for army work. Increasing numbers of parents are privately bringing their children from the Public and other Secondary Schools, and University students are now coming to receive the Institute's advice in regard to their future career, based on as careful an examination and on as complete a knowledge of the individual and of the available opportunities as are possible in the circumstances.

Whatever be the career adopted, perhaps no character trait is more generally important for success than tact. Tact involves many abilities. Besides requiring self-control and wise judgment, it demands the ability to see *ourselves* in a given situation as others see us. It further demands the ability to imagine *ourselves* in any situation in which we find others placed. Even more, it demands our ability to imagine others as *they* see *themselves* in that situation. For to appreciate properly how others feel is not to read *ourselves* into their position, but to use our knowledge of their character in interpreting *their* feelings and *their* wills at that moment.

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Psychologists are coming to recognise the play of intelligence in three very different classes of objects, and the existence of vast individual differences, according as intelligence is brought to bear on one or other of these three objects. They are lifeless objects, symbols expressing ideas, and living persons. The intelligence of some excels in dealing with concrete things, the intelligence of others excels in dealing with words and abstract notions, the intelligence of others again excels in dealing with their fellow-creatures.

But intelligence in any of these three spheres cannot make much headway unless with it are linked appropriate traits of character. Tact, as we have just seen, is of the utmost value in dealing with one's fellows. Wisdom, again, is important in enabling us to make the best use of our intelligence. The most intelligent man may be unsuccessful owing to lack of wisdom, whether he be manipulating things, ideas, or persons.

Only the anchorite, whether in religion, art or science, can gain success without fighting his fellow-creatures; and even the anchorite has to engage in constant conflict—with himself. He who lives in the world, even the prophet or the saint—even the conscientious objector to warfare—must battle with his fellows, in order to achieve his ends. But wisdom is always needed in order to seize the fitting times for fighting. The incessant fighter—he whose sword is everlastingly unsheathed—never reaps success. In the long run, not even courage is adequate, unless assisted by wise dealing with one's opponents.

Indeed, the ability to recognise and to seize fitting opportunities for action in general, is the mark of a

successful man. Do not believe in the man who ascribes his persistent failures to the lack of opportunities. His failures are due to the fact that he has never adequately recognised those opportunities or seized upon them when they occurred. There are people who say : " I always lose the toss when I spin a coin." But consider the numbers of times a coin may be tossed during a man's career, and the equal probabilities throughout on each occasion in favour of his winning or losing. Is it seriously to be believed that the dice are so loaded by Providence against this man that throughout his life his calls are invariably or even usually wrong ? What happens is that, owing to his peculiar temperament, he forgets the past occasions when he has won and only recalls those when he has lost. So, too, when an unsuccessful man attributes his failures to " ill-luck," what happens is that he fails to recall, and probably has never really appreciated, the many *favourable* opportunities of which he neglected to take advantage. Let not the man whose ventures invariably go wrong reap consolation by dubbing himself " unlucky." His failures are due to his own incapacity. Either he has not seized the right moments for action ; or if he did seize them, he acted unwisely.

Of course I do not mean that certain passing successes are not gained by good luck, or that certain failures are not the result of bad luck. But a few good chances, even a brief run of good luck, will not suffice to ensure permanent success. He who makes a big fortune which is attributable to good luck will not retain it unless his future enterprises and other actions

are guided by wisdom. And he who can justly blame his luck for losing a fortune will in all probability recoup himself later, unless his failure be really due to his own incompetence. Be always chary, therefore, of attributing your successes and failures to *chance*. True, the scale may sometimes be turned in your favour by the breath of a passing wind. But often the likelihood of the coming of that breath of wind will have been foreseen by the successful man, who will have made suitable plans to receive it and to take advantage of it. In the long run, then, the lucky man and the unlucky man do not enter into our discussion of success. They are a defence-creation of the unsuccessful. Our ultimate success or failure depends not on accident, but on ourselves and on our control over our environment.

Let me not be supposed here to deny the existence of Divine direction or the value of Prayer. The psychologist, realising in the human mind purpose as well as mechanism, can hardly fail to read both purposeful direction and blind mechanism into the universe which surrounds him. If as a man of science he must confess his utter ignorance of the mode of working of such Divine direction, if he must confess his inability to see how individual prayer can result in interference with natural laws, the psychologist would be the last to deny the subjective value of prayer and of the belief in Divine guidance for sustaining moral, and hence successful, conduct.

There are two very different ways by which we realise when the right opportunity for action has arrived, and which action is the best in the given

circumstances. The one way is by our intuition, the other by our intellect. Intuition gives the solution at a flash ; intellect reaches it more sedately by logical argument, carefully weighing the " pros " and " cons " and coming after due deliberation to a definite decision or judgment. Intuition plays a far more important part in our life than is generally supposed ; so often is it necessary for us to make a decision without having time to reflect on the many considerations which should guide us in one direction or in another. The right opinion or the right action comes to us then almost as an inspiration. We do not *know* why it is right, but we *feel* it to be so ; and we act accordingly, without going through the laborious process of intellectual reasoning.

There can be little doubt that there are wide individual differences in regard to the extent to which we are endowed with intuition. But there can also be little doubt that intuition in any given occupation can be cultivated, and that its value can be improved by careful exercise. The successful business man or financier owes his success largely to intuition. He often does not know why he takes certain lines of action ; frequently, even if he were able, he has not time enough, to think out his reasons for a decision. Indeed, he would often be hampered and be less successful if he were to attempt to do so, just as the caterpillar in the Indian fable, upon being asked which leg he put forth first, was so perplexed that he was unable to walk thereafter.

It does not, however, follow that the business man or financier would be equally well served by his

intuition in fields other than that in which he is endowed with special ability and has had special experience. Previous practice or, more precisely, learning the best methods of recognising and reacting to different situations, has been helpful in enabling him to short-circuit the long, elaborate trains of thought which a novice would find necessary to reach a given decision. So too, on a different level of momentous decisions, the expert chauffeur will avoid accidents by almost automatically realising the danger and realising the correct response, without consideration and indeed, it may be, without consciousness. He has not only acquired by experience a vast number of habitual responses, which are correctly adjusted to the appropriate environment. He has also acquired the power of appropriate unconscious inference, seizing the correct solution to the situation without ever having consciously grasped its full nature. The successful man, then, must have schooled himself in the best responses, *i.e.*, in the best methods of work ; he must have acquired a vast series of highly serviceable habits and, by their incorporation, a sensitive, successful adaptability.

Intuition is commonly assumed to be the special endowment of women. This is probably untrue. But it is surely more often used by them on occasions when men would be guided by intellect. Intuition is common to all humanity, both male and female ; and success in life is largely due to the encouragement of it. If women use it more, it is because they have generally been in closer, if narrower, touch than men with the external world, and because up to the present genera-

tion they were less familiar with abstract thought owing to their different education and social position. There can be little doubt that too much reading, especially of philosophical and scientific books, and too much reflection make for a reduction of our native powers of intuition and wisdom. They make for over-fastidiousness and inhibit speedy independent action and judgment. Success has been often thwarted by over-reading and over-thinking.

Intuition is closely akin to genius, the latter being concerned with original ideas, the former with judgments and decisions, and each working from unconscious sources. Both genius and intuition, however, demand the guiding control of the intellect. The flash of inspiration which occurs to the man of genius, *e.g.*, the artist, is usually so crude as to need considerable modification by his intellect before it can be satisfactorily imparted to his fellows ; indeed it may prove untrue or worthless when submitted to the censorship of intellectual reflection. The same holds for intuition. Intuition often needs the watchful guidance of the intellect. For he who judges intuitively is always more or less "cocksure" of the correctness of his conclusion. There is never much doubt about an intuition : it is always accompanied by some feeling of certainty—"this is unquestionably the correct line : I must take it." But like the flashes of genius, it may be right or wrong ; and like them, it needs the higher control of the intellect. Otherwise it may run wild and prove a dangerous weapon.

True success in life depends not only on the choice of a career, but also on the choice of a hobby. We may

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meet with men who appear to spend their entire lives at their vocation. We may observe business men continuing late in years at their occupation when they have already made a huge fortune, and refusing to retire because they feel that if they did so all interest would have gone out of their life. They remain in harness, not because they desire more wealth, not because they love the exercise of power and are desiring still greater conquests, not because the habits of their occupation are so strong, but because they have no other interest to fall back upon. Most men, of course, do not spend their whole lives in their vocation. They need rest and change, and they have to choose their methods of relaxation. They naturally employ their leisure time in ways that contrast with the nature of their daily vocation, so that the details and worries of the latter have little chance of intruding into their selected hobbies.

To lay down any but the most general rules as to the choice of a hobby is clearly impossible. In addition to differing from one's daily work, a successful hobby must conform to the individual's natural tastes and abilities, and to his constitution and ideals which may vary as he advances in life. Hobbies may therefore change as life progresses. Ultimately a hobby should be encouraged which will remain a source of pleasure and interest when a man has retired from his professional or business career.

The more truly psychological definition of success which I proposed at the outset of this chapter makes it possible for a man to be a success in any sphere of life, however humble. Whatever be that sphere, there is

no such thing as an unskilled occupation : right and wrong ways, better and worse ways, exist of carrying out every kind of activity. If a person knows that he is doing even the lowliest job well, if he is receiving adequate reward for his labour, if he realises that dignity, that social service, in his work which is inherent in all useful work, and if he has no ambition for any other kind of work—he must undoubtedly be termed “ successful.”

Most workers, however, have the ambition to rise beyond the present level of their activities. Even the artist and the man of science plan for still loftier inspirations and still greater discoveries, although these desires may be tainted by the ambition to gain glory and approbation. More obviously, the business man longs for still wider fields of conquest, power and control. But lower ambitions may also enter here in the form of the desire to accumulate wealth or to rise in the social level. In the case of these lower ambitions, success, in our psychological sense, is seldom genuine. For as soon as one social grade is quitted or as soon as one kind of approval or one mark of distinction is received, the mind at once turns to a still higher grade or kind of distinction which has now to be aimed at, without finding adequate satisfaction in what has already been achieved. Social climbing is apt to prove a will-o'-the-wisp : however far it be pursued, it eludes the grasp by running still further away from him who chases it.

But so long as human nature and the social institutions of our civilisation remain as they are, different social levels will always exist and the higher levels will

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always need to be recruited from those who can rise from the lower. So long as different social levels exist, Society will in self-defence always make it difficult for men to pass from lower to higher levels, and the ambition to do so will remain a social, nay a biological, necessity.

To be fully successful in such social rising, one must be accepted into the new social level into which one has advanced. This seldom happens immediately ; indeed the period of probation may endure for more than one generation, especially if a man's rate of adaptation to the new social environment be very slow.

Good men, says Plato, in the first book of his Republic, are not ambitious. He couples ambition with covetousness and calls them both a disgrace. Here, however, Plato appears to be thinking more especially of those who push themselves forward into positions of responsibility in the government of the State, instead of waiting until they are chosen for the purpose. Ambition, in the sense of desire for ever greater achievement, cannot be decried. It is responsible for all social progress, perhaps even for much in organic evolution. What is reprehensible is not ambition, but *uncontrolled* ambition. It is not the success of ambition, but the manner in which that success has been achieved, which needs criticism. No words are too strong in which to execrate the ambitious person who reaches fame by cruelly riding rough-shod over those of his fellows whom he has met in his path, regardless of the dictates of honesty and justice, careless of the canons of good taste and nice feeling, never squarely " playing the game."

Whatever changes a man may wish to effect in order to achieve success, whatever be the chosen path of his career and conduct throughout life, one golden rule is paramount—let him be honest and true to himself. This means that at every crisis we must avoid pandering to any passing whim or to any lower-level impulse. In our desire for knowledge, in our love of glory or power, even in our thirst for wealth or approval, we must not take any important step in the course of our careers without assuring ourselves that it is consistent with our whole personality and with its highest ideals. This, in turn, means as full a knowledge of ourselves as is attainable. By knowing ourselves, by squarely facing the conflicts which may confront them, by realising the true emotional origins of aims and desires, the sources of which we unconsciously tend to disguise by attributing to them a rational nature, we may learn to control our conduct, and also to control our environment by controlling the conduct of our fellows.

It is generally believed, although the scientific evidence is so far unconvincing, that an instinct tends to die out, in proportion to our neglect to exercise it. If this be true, a baneful instinctive tendency to action is likely to fade away if it is discouraged. Further, just as our memory may be improved by exercise in the best methods of learning, and just as our skilled actions are acquired by practice in co-ordinating and in integrating various more elementary separate actions and in eliminating harmful or needless actions, so we can improve our self-control by encouraging the practice, and hence the habit, of rejecting the baser motives to action, of encouraging decisions of the highest level, of

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adopting the loftiest attitudes and of achieving the utmost order in one's thoughts and actions.

Our ability to improve our character may be questioned by those who suppose that the successful man is born rather than made. Let me try to justify what I have just said by an analogy. Consider an army unit. Its character depends on that of its commanding officer. Consider an industrial unit. Where the higher management is bad, that badness is reflected in the conduct even of the humblest worker. If jealousy, suspicion, injustice, lack of sympathy, ill-temper, or irritability exists in the higher ranks, it spreads throughout the entire unit. On the other hand, courage, efficiency, good fellowship and honest work are similarly and equally contagious. One may truthfully say—show me the men and I will tell you the character of their masters.

Now what does this mean but that a good "atmosphere" can be created in which it is difficult for bad character and bad conduct to flourish. It does not mean that the bad is *destroyed*, only that it is unconsciously *discouraged* (or "inhibited"). Apply this example to ourselves, and substitute, for the prevailing atmosphere due to our superiors, the past thoughts and conduct which we have allowed to be woven into our individual experience and our mental constitution. The more often we have previously refrained from thoughts and decisions conducive to failure, the more easily can we inhibit them in the future, and choose lines of thought and action conducive to success.

To be successful we must act on our decisions, and act immediately. Good intentions and resolutions are

useless, unless they are at once carried into effect. Such procrastination even deters their formation in the future. They grow by what they feed on, and their fodder lies in their expression. Moreover, a kind Heaven, as William James once pointed out, may forgive our lapses into wrong thoughts and conduct ; but *our own* mental and nervous constitution never forgives nor forgets them. Down among the intricacies of our mental and nervous structure, our wrong thoughts, decisions and acts lie eternally recorded, never to be erased from the book of life which we carry within ourselves.

I do not, of course, mean that our conduct is to be always determined by the cold, logical light of reason, and that we are to shun all emotional forces as if they were vain and evil. On the contrary, most of our actions, even if apparently attributable to the intellect, are really and fundamentally of emotional origin. What we have to recognise is the *true* motive for our actions in our desire for success, if success is to be ultimately attained. We have to be assured that our motive and the ends served by that motive are in harmony with our true selves and with our true ideals. Thus and only thus can we achieve real success.

In this chapter I have left out many psychological factors, such as patience, self-confidence, thoroughness, endurance, and many others, which will no doubt occur to you as important for success. I have merely selected those which interested me most ; and if I have also interested you I shall consider that on this occasion *I have met with "success."*

CHAPTER V

PRAYER

THE sense in which I intend to use the term "prayer" in this chapter is a very wide one ; I shall use it to cover every form of communication with the unknown. At an early stage such communication took place only to obtain the realisation of a hope or desire : it was a prayer *for* something : it implied a feeling of humility in the suppliant. Subsequently, the feeling of awe (in which, in addition to humility, we may detect the feelings of wonder and fear) and still later the feeling of reverence (which includes, besides humility, also wonder and love) towards the god led also to prayers of *praise* ; and the feelings of gratitude towards him led to prayers of *thanksgiving*. Finally, we have that form of communication known to us as *communion*, which in its most complete form leads to the total absorption of the personality of the worshipper in that of the being worshipped, accompanied in variable degree by what is termed the "mystical" state, or state of "ecstasy."

Primitively, as I have said, prayer was employed to obtain the realisation of a hope or desire ; this is the narrower sense in which the term "prayer" is now generally used. Now such use of the word implies *for us* a certain relation between the utterer of the prayer

and its recipient—a recognition by the utterer, at least temporarily, of his inferiority. In the *most primitive* forms of communication with the unknown, however, prayer consists not so much in a humble request to a superior as in a peremptory “demand” made by an equal. The Latin word *demandare* originally meant “to charge someone with the performance of something,” “to require of him that performance,” “to ask in a way that commands obedience or compliance.” It was only in later times that *demandare*, and hence the French *demandeur*, acquired the sense of “to request.” Such a transition of attitude may also be observed in the development of infant life. The early cries of an infant soon partake of the nature of demands: “I must have it” is his general attitude. His earliest impulses are only felt in order to be satisfied. But with growing experience, he quickly finds that they are not immediately satisfiable. And their obstruction gives rise in him to desires. The resistances with which they meet teach him that his will is dependent on the wills of others; he comes to realise that those others are superior to him, and that in his helplessness he must humbly request, instead of expecting, or rudely “demanding,” the realisation of his needs.

In other ways primitive man more nearly resembled the child in his addresses to the supernatural. He tended to personalise the inanimate forces of nature and to endow them with human characters. He also associated the accidental or occasional sequences of various events as if they were the invariable causes and effects of one another—much as occurred in the case of the annoying pianist, whose neighbour fortunately

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discovered that when he removed a brick from his own chimney he could make the pianist's chimney smoke, so that one day the pianist informed his neighbour—"Do you know, I have been having a most curious experience lately. I have had to give up playing my piano. I find that every time I play, my chimney starts smoking!"

Partly through such errors of association, partly owing to fear of the unknown powers of his neighbours, primitive man believed, in an exaggerated degree, that man could control nature. Often, no doubt, he realised his own limitations—as in the case of a Murray Islander of the Torres Straits (between New Guinea and Australia), who once remarked to me, when I begged him to show me how he uttered a spell for rain—"No good me make rain to-day, weather he too fine." Still the savage fears, or even believes, that many of his fellows have the power of magic, that such magicians are as superior to the forces of nature as, say, army officers appear to be superior to well-disciplined men in the ranks. They have only to give orders and their *prestige* insures them obedience. Any explanation of the reasons for their wish, or any expression of their gratitude for its realisation, is deemed out of place.

It has been commonly assumed that "magic" preceded "religion"—in other words, that the use of spells or dictation preceded the use of prayer in its narrower sense of request. No doubt, in the ritual of magical ceremony, as described to us by travellers (always, I fear, more or less suspect), we find little recorded in the nature of prayer. Yet not uncommonly,

it may be conjectured, the man who is working magic against his enemy must lack the confidence and assurance which will enable him wholly to dispense with the attitude of request, even though the request be addressed merely to the magical material personified. Moreover the ubiquitous, simultaneous belief in unknown agencies, especially malign, and likewise the fear of the departed, leading to hero worship and the cult of the dead, must surely have prevented any temporal dissociation of magic and religion, however slender and ill-defined may have been the belief in the supernatural at the outset. It is, moreover, conceivable that certain practices which may at first have had some religious character, *i.e.*, which may at first have involved a wish expressed to some higher power, may by familiar reiteration have degenerated into the utterance of mere quasi-magical spells—just as in more advanced religions the mere performance of ritual—even by a paid official—may come to be deemed adequate, in the total absence of what we regard as real prayer to the Deity.

At an early stage in the evolution of religion, gods were conceived by man in purely human form. This “*anthropomorphic*” stage may be distinguished from the far later “*anthropopathic*” stage, which is characterised by the recognition that the god, while not human in bodily form, nevertheless exhibits the higher mental characters of man, meeting good with reward and evil with punishment, and manifesting a love comparable to those which human beings manifest and dispense among themselves. The anthropomorphic stage was at first a “polytheistic” one : many gods—

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some good, others bad—were postulated. This polytheistic belief was succeeded by the “henotheistic” belief, in which, while several gods were still recognised, one was regarded as prepotent over the rest. Only in the highest forms of the henotheistic religion, or during its transition to the “monotheistic” form of religion—the belief in one single god—was the dawn of the anthropopathic stage first possible, when the conception of god in the form of a human body was replaced by that of a god of inconceivable substance and shape endowed with the most highly idealised human mental characteristics.

The majority of mankind throughout the world still finds satisfaction in an anthropomorphic god (or gods). Only a small fraction has attained the second or anthropopathic level. A quite insignificant number has reached what will by many of us be regarded as a still higher plane—the conception of a god as so different from man, in mental as well as in bodily characteristics, that we are utterly impotent to form any idea of his real feelings, knowledge, intentions or desires. This I propose to call the “theistic” stage. He who has reached it can only say “God’s in his heaven, all’s right with the world.” Such a one may see instances of the good neglected, his dear ones torn from him, and evil-doers in prosperity. But solace is still possible for him from his belief that God’s justice and love are different from man’s; or at all events, that God’s motives and intentions are utterly incomprehensible to man; that everlastingly, “all’s right with the world.”

I lay stress on these three stages of human belief—

the anthropomorphic, the anthropopathic and the theistic—because they involve respectively different uses and functions of prayer. At the lower anthropomorphic levels, gods are regarded as little different from men. Uncivilised man probably looked on his gods much as our crossing-sweeper looks on members of the peerage as they drive past him, or as a typical *bourgeoise* regards her King. The early gods are, to all intents and purposes, human, both in bodily and mental form. They may be kind or unkind to men; they may be in good or bad temper; they may show jealousy, spite or favouritism. Primitive man needs therefore to “get on their right side.” He bargains with them, or he placates them with gifts. His gods love the sweet savour of roasting meat; therefore he offers them sacrifices, at first material, which later extend and develop into moral sacrifices. Early man was only generous to his gods because he expected immediate favours in return. A little later, man sacrificed his lower desires to the commands of his god, in full expectation of reward in the life to come. Only at the highest stage of evolution does man do good for good’s sake.

At an early stage it must have become patent that the merit of good deeds done by man to man is often both divinely and humanly unrecognised on earth. It would be idle to expect protection or “salvation” merely by performing kind acts to one’s fellow men. Society required more of him than this, if it were to reckon him as really good. Moreover, primitive man regarded himself as unsafe from the machinations of his fellows and from the dangers of natural (and

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supernatural) influences, unless he were repeatedly thinking of and addressing his gods. He asked their help on all his undertakings, whether his intentions were what we should regard as good or bad. He expected his gods to be moved by his prayers and offerings, just as if he were asking a favour of some fellow human being. He abused them if they failed him. A primitive god is thus conceived as behaving just like a man that yields at last to the importunate wishes of some neighbour who is continually making some request of him, or as behaving just like a man who grants a request because he hopes to get some favour in turn from him who asks it. And, just as man may approach an intermediary to obtain his good offices in procuring a favour from a third, so he comes in time to make use of the prayers of members of a priestly caste who have arisen by gaining the reputation of having greater influence, of being able to come into closer relation, with the gods.

At this stage, then, man is more fearful of the magic wrought by his fellow creatures and of the revenge of his unintentionally offended gods than he is sensitive to Divine retribution for his own wrong-doing to his fellows. And so long as polytheism reigns—so long as there exists in belief a number of independent rival gods—Divine punishment for social misconduct is hardly assurable. For there is always the chance, always the hope of protection by some god or other, even for a villain. We require the belief in a single all-powerful god, a “god of goodness,” before such a religious level is attainable. The two beliefs, the henotheistic belief and the belief in Divine punishment

and reward, develop together. The growing feeling of duty and of conscience, of remorse and of gratitude, imply conviction of sin and the need for, and the value of, Divine forgiveness. Hence, at the henotheistic stage, and still further at the monotheistic stage, prayer attains a distinctly higher level. The suppliant asks for success from a *moral* standpoint ; he claims that his intended act is a " good " one—that it *deserves* success. He prays to be made good ; and he prays to be forgiven the sins which he realises having committed, as well as to be kept from the temptations of yielding to sin. He examines himself and " confesses " his sins before his god—or before an intermediary appointed by his god as a confessor.

To such self-examination we may apply Dr. William Brown's convenient term " auto-gnosis." Its curative value in easing the mind of its anxieties can hardly be exaggerated. Mental " conflicts " are apt to result in a " burial in the unconscious " : the conflicting experience, which is shunned, may become harmfully hidden, inhibited or " repressed." The conflict and repression may result in anxiety, in remorse, in a sense of impending dread or punishment, in apparently causeless depression, and so forth. During confession, whether unaided or helped by some one consciously or unconsciously employing what we now call " psycho-therapeutic " methods, the unhappy sufferer is able to " know himself," *i.e.*, to drag forth the discordant complexes from their concealment, to realise the full nature of his conflict, and then—the most difficult of tasks—to *solve* that conflict.

The successful solution of such conflicts when they

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have involved self-condemnation, is commonly accompanied by the consciousness of forgiveness from without. The suppliant feels "whole" again. His burden is lightened, and he gains in mental and physical strength. His conflict—his tendency to dislocate (or dissociate) experiences (*e.g.*, his memories of sin from his notions of duty), which were warring with one another—is at an end. He is now at peace with the world and is full of gratitude to his god. He frames new resolutions for better conduct in the future.

Let us now turn to a brief consideration of a familiar condition in which conflict is especially prone to reveal itself—that of dreams. Of these there are two main kinds. The one consists in the revival of repressions which are æsthetically or ethically so distasteful that even in the dreaming state they usually appear only in a disguised form. The other kind of dream consists in the realisation of wishes which are unfulfilled merely because their gratification is physically—not morally—impossible. Children's dreams are nearly all of the latter variety: they dream of the fulfilment of the externally obstructed desires they experience in waking life. That is the main source of their conflicts, which owe their origin to the resistance offered by their elders or by their environment. That, too, as we have observed, is the main basis of the primitive suppliant's requests to his god—to satisfy those of his wishes which he finds physical difficulty in being able to realise. But at the henotheistic stage—and still more strongly at the monotheistic stage when a supreme god of goodness and loving kindness

becomes recognised—man's prayers fulfil the same loosening of the repressed moral conflict as occurs, in imperfect semi-unconscious form, in the first variety of dreams which we have distinguished. In the confession, however, of the suppliant he is fully conscious, not somnolent, as in dreaming; and the complex is present, naked and undisguised. There is no subsequent stage of waking, whereupon the complex is apt to return to its state of repression. There is a true reintegration, in which the sinner becomes whole and healed, first realising to the full his misdeeds and then experiencing that explanation, forgiveness and re-education which enable him to face the world and his god once more.

So far, we have been dealing with man's attitude to his god or gods while he is at the stage of believing that they will really be *moved* to help him in attaining what he wishes or believes himself to be entitled to. At the polytheistic level, two men (or people) will pray each to a different god for help one against the other. *Two* gods will then be warring with one another, in order to aid their respective *protégés* in their contest. At a still later stage, *one and the same god* will be besought to interfere in warfare by the two belligerents on their behalf; each believing and claiming of that god that the right lies on his own side, and that the other is an evil-doer with perverse ideas for which he deserves defeat. At this stage the god is supposed to be sufficiently human in mind to listen to the reasons advanced by those who pray to him, and to give victory to the one side or the other, according to his decision in which he will be influenced by the prayers

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that reach him. Although no longer of human *bodily* form, God is thus conceived to be still of human *mental* form, and to be "moved" by the prayers of his creatures, directing the world accordingly.

Let us now consider a form of prayer not wholly absent at the lower levels of religious belief, but especially important at the most abstract level which we have termed "theistic." Here man may no longer believe that God's guidance of the world is directly influenced by human prayer ; and man no longer does good for reward's sake, but for its own sake. Here he no longer believes that God's love and sense of justice can be interpreted in terms of human experience. His conception of the Divine is akin to that of Wordsworth :

And I have felt
A presence that disturbs me with the joy
Of elevated thoughts : a sense sublime
Of something far more deeply interposed,
Whose dwelling is the light of setting sun,
And the round ocean and the living air,
And the blue sky, and in the mind of man :
A motive and a spirit, that impels
All thinking things, all objects of all thought,
And rolls through all things.

Tintern Abbey.

He asks no longer "*My* will be done" ; but rather—in his pursuit of goodness, truth and beauty—he submits himself humbly to "*Thy* will be done." He "communes" with God rather than asks favours of Him. He aims at understanding Him ; he endeavours to consider himself as part of Him ; he strives to lose himself in Him—in his efforts to be at peace and in

harmony with himself and with the world. Such communion may be recognised in rudimentary form, perhaps even at the polytheistic stage, certainly at the henotheistic stage. It varies in completeness from mere meditation to its most extreme form, when self-consciousness is lost and is merged in the "person," or other conception, of the divine.

An apparently similar loss of self-consciousness may occur in the orgasm of sexual love, during the ecstasy of the appreciation of beauty, and as an effect of the hypnotic narrowing of consciousness obtained by monotony of environment or by suggestion. That it is obtainable, or at least accompanied, by a kind of "sublimation" of the sexual appetite, in its transference from the human to the divine forms, may be seen in the records of certain saintly men and (especially) women. It is obtainable also by surrender to the beauty of the godhead. It is obtainable, or at least is aided, by the performance of certain appropriate actions, by the restriction of thought, as practised among the Yoghies of India.

I will not pause to discuss the harmfulness of such more or less religious procedure when carried to an extreme and when employed to excess. But of the assistance to human troubles offered by the mystical state, when it is exercised in moderation, there can be no possible doubt. When it has passed away, it is followed by a feeling of strength and of security, a peace and happiness coming from a complete understanding, from a vision of seeming reality behind the universe, that is probably unobtainable by other means.

If worship is no longer to aim mainly at pleasing

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the Deity, if we are no longer to ask for victory over an enemy, or for rain or fine weather for our crops, if we are not objectively to expect forgiveness of sins, reward for merit, safety from temptation, facilities for upright action, what remains of prayer at the theistic stage? In the prayer of communion, answers Professor Hocking,¹ "we must know how . . . to regard all ambitions and duties for the time as non-existent; to reduce all reality to the primitive terms of self, universe, and the present moment (wherein everything begins from the beginning). In this stark, original selfhood, detached from action and from the warping of the interests of action, we view all that active career as in a drama, as the life of another, in the light of what we can then and there muster of the whole. Its loves and hates rise up before us in a more universal frame. We must recall especially whatever is still to us of effortless value, whatever we do still sincerely enjoy and love, and we must pray for the vision of the whole of which these various goods are fragments, and upon which they depend as their absolute. I use the word 'pray,' because, in the end, there is no other word which conveys that attitude of will in which effort is so combined with non-effort, and self-assertion with consciousness of absolute dependence . . .; we are relying upon an attachment to the whole which is too deep in us to be lost or overcome; we are striving to 'enter into ourselves,' to recognise this attachment for what it is, the love of God of that alienated world. This is prayer."

¹ "The Meaning of God in Human Experience," pp. 38, 439. New Haven: Yale University Press. 1912.

I quote this extract, obscure though it is in parts, just as it appears (save for a short omission) in Professor J. B. Pratt's work, "The Religious Consciousness." He properly points out that the repetition of prayers, even if their meaning be neglected or be not understood, and that the maintenance of a certain reverent posture, may produce effects not only by inducing ecstasy, but also by direct suggestion and by preventing the mind from wandering while it is engaged on some religious theme. Such uses of the prayer are to be found not only throughout Europe but also in the Far East. A Buddhist monk of Mandalay once told Professor Pratt: "'Prayer repeated by one who does not understand any of it—for instance, a Pali prayer recited by one who knows no Pali—may have some value; for . . . the man at least *knows that he is praying* and *means* these unintelligible syllables as a prayer, and this puts him in a prayerful state of mind. For this reason our sacred books assign *some* value even to prayers which one does not understand'" (p. 316). Now "the intelligent Buddhist," so says the same monk, "does not pray for wealth nor health nor anything. He repeats certain phrases to the Buddha because of their good influence upon him. The whole thing is subjective, and the effects to be expected are spiritual only. Of course the value of the prayer in this sense is dependent on the state of mind of the man who prays" (pp. 334, 335).

In such prayers we get a glimpse of the nature and value which prayer may assume at the theistic level of religious belief. At first sight it seems tantamount to meditation, in the presence of and reliance on a Divine

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Power. At this level, prayers may, however, be also still employed in the form of a petition—not because the petitioner believes in a Divinity who will receive and answer it, but because experience has taught him that praying of such a kind is subjectively helpful. Thus one of Professor Pratt's former pupils informed him : “ It is a good thing to formulate definitely one's desires and ideals, and by examining into their motives decide whether or not they are worthy. In asking for anything I always try to make up my mind why I want it, and what will be the result of my obtaining it, and in consequence prayer sometimes leads me to give up cherished schemes. My conception of God is at present rather abstract than personal, and so my prayers are not often petitions for definite things. I incline to believe that petitions do not affect God. Still I think it best to make petitions for no other reason than for the stimulus that they give me in the quest of that for which I have asked. Most of my prayer is a seeking after what is best for me or for others, and therefore to be asked for and striven after. By determining to strive after it, I bring into play a better self within to aid in obtaining it. . . . The subjective benefits of prayer are sufficient to make it very much worth while. In fact, if such earnest self-examination and meditation as I have described is to be considered prayer (and I so consider it) it is indispensable ” (pp. 330, 331).

Few, however, attain this level of religious belief and practice. Some, indeed, instead of reaching it, tend to discard all practical interest in the Divine and to repress every tendency to explore it. Such is only

too likely to be the reaction of those convinced of the objective uselessness of prayer. Let us, however, inquire whether this conviction is so fully justifiable as to many it will appear from the standpoint of natural science.

For many years a fierce controversy has raged over the extent of the influence of human minds over one another. The phenomena of suggestion, and of one remarkable condition for suggestion, namely, hypnosis, have been placed beyond doubt. Wishes may thus be conveyed by the language or even by gestures of command from one person to another, who will act in accordance with such dictates without being necessarily conscious of having received them. Far more questionable, on the other hand, is the possibility of communication of thoughts between man and man at a distance. Telepathy appears to many impossible, because inconceivable; but X-rays and "wireless" were equally inconceivable half-a-century ago. By others telepathy is accepted on the basis of experimental evidence which to the more careful examiner appears far too weak to lend any cogent support. Nevertheless telepathy *may* conceivably occur under conditions which preclude the success of experiment; it *may* depend on certain unknown external circumstances which man is powerless to arrange. If we concede a pan-psychism, and a pan-theism—a mind and a god that "rolls through all things," if we suppose that mind is spread throughout the universe, that we have each a spark of the Divine in us, that each living organism is characterised not only by blind mechanism but by a purpose that is shared by man

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with God—is the belief so impossible that God's purpose is dependent on man's purpose of which it forms a part, and that in certain directions the Will of God is limited, perhaps even influenced, by the wills of men? Is it not possible, then, that there is a grain of truth in primitive man's belief that he is able to control nature, however different the control turns out to be from his early notions, and that prayer may have some unknown influence on the course of events?

The mass of the inhabitants of Europe may be described as being at the henotheistic level. A minority are virtually or actually at the polytheistic level. The nature of prayer varies, as I have attempted to show, at each of these levels. Thus, in any one civilised or semi-civilised community, different individuals pray in widely different ways. At the one extreme we shall find the few that pray in the fashion of Professor Pratt's former student, as described by him in the extract I have already quoted, who prays avowedly for the purely subjective effects which he knows by experience are produced in him by prayer. Midway, we may find some among us who believe that God's Will is inseparable from our own wills and that thus the purpose of God is partly aided and fulfilled by our prayers. At the other extreme, we shall find those whose prayers are uttered in the full belief that they can work quite objectively. Thus in Maitland's life of Anna Kingsford, we are told how in her bitter hatred of vivisection and of the eminent French physiologist and vivisector, Claude Bernard, in particular, "with passionate energy she invoked the wrath of God upon him, at the same time hurling her

whole spiritual being at him with all her might, as if with intent to smite him then and there with destruction." We are told that she regarded Claude Bernard's sudden death, which occurred shortly after this prayer, as a direct answer to it. She said : " It has been strongly borne in upon my mind that he has indeed come to his death through my agency." In some adults the mentality of childhood or of primitive manhood persists : they are always praying for material gain. Anna Kingsford's attitude was only just removed from the level of primitive magic. Others tend more and more to pray for spiritual blessing. So, too, the degree of communion with God varies from mere address, meditation and conversation to a complete absorption within the Divine Presence.

There was a time when public worship was enjoined because it was feared that in silent and private prayer the individual might be secretly invoking harm on one or more of the other members of the same community. Such danger is now disregarded, and the relative values of public and private worship are discussed in a different spirit. Into this subject I have not the time to enter. But I may be allowed to remark that congregational prayer is clearly necessary, if religion is not to become a matter of purely individual concern. We have passed the time when sin was regarded as a matter for communal, not individual responsibility, when confession was publicly made by or on behalf of the whole people, not privately by any individual member on his own behalf. But the value of social confession and social repentance, the influence of massed prayer, and the importance of the social con-

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sciousness generally are not to be undervalued. Religion has its social as well as its individual side. And if religion is to continue as a *social* institution, a spirit of the utmost toleration must prevail in the church so that worshippers may find an opportunity for prayer, each in the manner which is best suited to his mental level. Within the narrow limits of this chapter I have endeavoured to show the nature and extent of these different levels. And I may add that they differ not only in different persons, but in the same person at different times.

CHAPTER VI

INDIVIDUAL RELIGIOUS DIFFERENCES

IN this chapter I am going to use the word "religion" in its widest sense, so as to include both beliefs, thoughts and attitudes in regard to God, on the one hand, and ceremonial, ritual and other observances, on the other. The differences which I shall discuss are those distinguishing religious individuals, not communities, from one another—although the religious differences which occur between individuals are also reflected in many of the differences which distinguish religious bodies from one another. It is my object to point out the psychological basis of these individual religious differences—in other words to indicate how these *religious* differences depend on individual *mental* differences, *i.e.*, on individual differences in mental make-up or constitution.

Many years ago the distinguished French experimenter in psychology, the late Alfred Binet, noted¹ that in estimating what is technically called the "cutaneous spatial threshold" two widely different, contrasting courses of behaviour might be noted in different individuals. This threshold is obtained by applying the two points of a "divider" or compass simultaneously to the surface of the skin, with the

¹ "L'Année psychologique," 1903.

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object of determining the smallest distance between the two points at which the touch can just be felt by the subject as double. If the distance be below that limit, the two points are felt not as two but as one. The determination of the cutaneous spatial threshold is the determination of that limiting distance. Now Binet found that there were some persons, whom he called *simplistes*, who would only say that they were touched by two points when they could clearly distinguish the two separate contacts of the compass points simultaneously applied to the skin. But he also found that there were other persons, whom he called *interpréteurs*, who could and would return answers of a double contact although the distance between the points was so small that they could not longer appreciate the two touches as such. (Throughout these experiments sometimes two points and sometimes only a single point of the compass were actually applied, in irregular order.) It appeared that the latter group of subjects, the *interpréteurs*, were able with success to distinguish, within certain limits, between (a) the experience of a broad blurred single touch which they received from the application of two near points, and (b) the experience of a more definite, more narrowly localised, single touch which they received from the application of only one point of the compass to the surface of their skin. The first group were so constituted psychologically that they would only record what they immediately, easily and clearly experienced. The second group were ready to use every available cue which would enable them to interpret vague differences between single and double

touches which were not actually experienced in terms of these.

The same two types have also been detected in estimations of visual acuity. Two persons of the same sensory acuity will differ according as they belong to the one type or to the other. The one, when confronted with the ordinary test card of printed letters of different sizes, will refuse to name a letter unless he can see it distinctly. The other, when at such a distance from the card that he can only see a letter, say a P, as a mere blur, will nevertheless name it correctly, successfully distinguishing it from other letters, say from a D, because, perhaps, in the P the curved blur occurs only near the top of the vertical line, whereas in the D the blur is of larger area and relates to the whole length of the vertical line.

The same difference of type occurs in the attempt to listen to words indistinctly heard, for example, on the telephone or on the gramophone. A given *simpliste* and a given *interpréteur* may have the same auditory acuity ; that is to say, they will just be able to hear, at the same distance, the same very weak auditory stimulus, *e.g.*, the tick of a watch or the sound of a tuning fork. But when interpretation enters, as in making out the meaning of words heard, the *interpréteur* will succeed where the blunt methods and attitudes adopted by the *simpliste* fail. The one approaches the imaginative, the other the scientific type. I do not mean, of course, to imply that imagination does not enter into the framing of a scientific hypothesis or into the planning of a scientific experiment. But in the scientific experiment itself, in accurate

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observation, imagination must play an inconspicuous and subordinate part.

Let me relate you an experiment showing similar differences in "imaginative" and "scientific" attitudes, which Binet performed¹ on his two daughters Marguérite and Armande, respectively aged fourteen-and-a-half and thirteen. He asked them each to write an independent little essay on the leaf of a chestnut-tree which he placed before them. Marguérite's essay, written in 11 minutes, 15 seconds, is as follows :—

"The leaf I see before me comes from the chestnut tree. It was gathered in autumn, for almost all the leaflets (save two) are yellow, and one is half green and yellow.

"This is a leaf composed of seven leaflets, uniting at a centre which ends in the stalk called the petiole ; and this attaches the leaf to the tree.

"Not all the leaflets are of the same size : four of the seven are much smaller than the other three.

"The chestnut is a dicotyledon ; one can see that from the ramifying venation of the leaf.

"In several parts the leaf is dotted with spots of rust colour ; there is a hole in one of the leaflets.

"I do not know what more to say about this chestnut leaf."

Armande's essay, written in 8 minutes, is as follows :

"This is the leaf of a chestnut tree, which has only lately fallen, withered before the winds of autumn.

"The leaf is yellow, but it is still stiff and uncurled. Perhaps a little strength yet remains in the poor thing.

"The leaves still bear some traces of their former green colour ; but yellow is the prevailing tone. Their edges bear a brown and reddish streak.

¹ "L'Etude expérimentale de l'Intelligence," 1903.

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"The seven leaves are all still very beautiful; the greenish stalk is not yet separated from them.

"Poor leaf, now destined to take wing upon the roads, there to decay amid a heap of many others. It is dead to-day . . . it lived yesterday. Yesterday, hanging from the branch, it awaited the fatal gust of wind which should detach it,—as one on his death-bed who awaits his last agony. But the leaf was unaware of its danger. It fell placidly to the ground."

This interesting psychological difference between those who are ready to read extensive meaning into a presentation and those who will only record the blunt facts, must surely play an important part in religious differences. The one type will be concerned largely with the spirit, the other strictly with the letter of religion. The one is impatient of, even uninterested in, objective detail, the other pins himself conscientiously to exact facts. The one has no difficulty in overlooking what is really out-of-date, or literally objectionable, or unrealisable; the other insists either on the strict acceptance of every word contained in printed prayer, or else on its removal. The one sees no difficulty in accepting such Biblical verses as describe God walking in a garden or descending from heaven and standing at the door of a tent (Gen. iii. 8; Num. xii. 5). He is ready to teach his children fairy-tales and Bible stories which he knows to be verbally untrue; whereas the other would banish them because he lacks the spirit of imagination or gains no satisfaction from its free play when it runs counter to his demand for literal accuracy.

From these two extremes in mental constitution (and of course we must recognise the existence of every gradation between these—as indeed between all other—

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extremes and of variations at different times even in one and the same individual), it is an easy step to pass to the consideration of two somewhat similar antagonistic mental types—the so-called “extravert” and the so-called “introvert.” Pre-eminently the extravert is the doer, the introvert the thinker. The extravert’s interests and conscious processes are centred on the world without us, the introvert’s on the world within. The extravert is less inclined than the introvert to surrender his everyday practical attitude, his awareness of his own individuality and of its relations to its surroundings, for the atmosphere of mysticism and ecstasy. Each comes to lay stress on a different aspect of religion. For the extravert the performance of ceremonies and forms, which needs his action, is fundamental. For the introvert they are relatively unimportant symbols of his belief and faith. The extravert stresses communal *doctrine* and *observance*, leaving the individual free to *think* what he likes. He is of the so-called “priestly” type in Biblical history, whereas the introvert is of the “prophetic” type, caring far less for ecclesiastical law and ritual than for ethical principles. The extravert wants elaborate ceremony and corporate orthodoxy for the worship of God; the introvert finds more enjoyment in silent prayer for the cure of his own soul, valuing ceremonial only for its effects on his inner feelings and thoughts in comparative isolation from the outer world. The desire of the extravert is for God to receive man’s praise and gratitude; thus arise huge *communal* organisations, prescribed ritual, and music in which all can join. The introvert’s longing is for his

own spiritual betterment ; for him praise and prayer and the love of truth, goodness and beauty are a *personal* matter, and he is ready to listen to beautiful music of a kind in which he cannot easily join. The extravert stresses righteous action ; the introvert individual belief and faith.

Such an extravert is not necessarily or predominantly intellectual, nor need such an introvert be highly emotional. Let us therefore pass to consider the religious differences between the more intellectual and the more emotional human types. I remember once being told by a savage who was singing to me sacred tunes long ago borrowed by his forbears from a distant island together with words which, in consequence of their foreign source, were quite meaningless to him—" it is not the words, it is the tune that matters." This savage was of the type disposed to æsthetic appreciation charged with emotional feeling. The opposite or reflective type clothes his religious thoughts in words rather than in music, and in intellectual rather than in emotional feeling. His is the type of the " non-conformist conscience," taking the utmost care in the choice of language, insisting on rigid, accurate, intelligible, truth, regulating the whole of his conduct according to strict, logical principles, and hating the vagueness of symbolism. Contrast him with the emotional type, who craves for the symbols of elaborate ritual, enjoys the mystical and finds no difficulty in establishing water-tight compartments which prevent any mutually inconsistent and less intelligent beliefs and observances from coming into actual conflict with one another.

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The life of some is ruled by intellectual reason, of others rather by naïve intuition. The one type seeks and demands intellectual, rational proofs of God ; the other is fully satisfied with his intuitive certainty of God. The intuitive type is commonly content with regarding God as a personality human, or at least as humane, and finds communion with him without difficulty. Or he may regard God as spread throughout nature—in streams, sunshine, thunder or stars—an approximately pantheistic view which also gives him little difficulty in establishing some kind of communion with Him. The intellectual type, on the other hand, is apt to look on God as so remote, incorporeal and inconceivable (*cf.* Isa. lv. 8) as to be wellnigh unapproachable and incommunicable.

I turn now to quite another kind of individual mental difference. There are some who find it relatively easy to pass from one mental process to another. But there are others in whom a mental process, once set going, tends to continue—or to persevere. Such “perseveration,” as the psychologist calls it, prevents a ready change from one line of thought or action or from one feeling to another. Probably this difficulty of changing engenders a dislike of change. But the liking or disliking of change, we must recognise, is also dependent on the instinct of curiosity, the interest in probing into the new, which is developed in very different degrees in different individuals ; and it is likewise dependent on the instinct for adventure, the desire and the courage to embark on the new, and finally on powers of originality, the ability to create the new. And so for these various reasons we reach two

antithetic types—the radical and the conservative—which are responsible for wide differences and antagonisms in religious belief and observances. The one welcomes or even delights in change and progress ; the other fears and hates it. The one looks on divine revelation as a gradual, changing unfolding of truth ; the other stresses the infallibility of tradition, the unalterable fixity and finality of the religious creeds and ceremonials which have been handed down to us.

Clearly the distinction between these two types does not depend merely on differences in readiness and in spontaneity slavishly to imitate what is found in their environment. It is not due to mere differences of suggestibility. The opposite aims and ideals of these two types depend not merely on the existence of the various mental types to which I have already directed your attention, but also on differences in breadth of sympathy, on differences in the ability to understand completely the points of view of others—above all, on differences in the desire for a world-wide peace, for broad uniformity of belief and for absorption within a herd far vaster than that circumscribed by one's own religious community. The attachment of the separatist is to a much smaller unit ; his "herd-instinct," as it has been roughly termed, works on a much smaller scale. He is apt to suspect and to hate all communities, religious or racial, other than his own.

But even within the opposite universalist and modernist type there are great differences in the expression of his wider gregarious spirit. Some of this type are ready to sacrifice their individual views in order to preserve communal solidarity ; others find

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it imperative to break away and to form separate units. Some of them find comfort in the belief that they are in advance of their times, and are willing to tolerate the fact that others lag far behind them. And if finally they do revolt, their action may be due not to their own seeming iconoclasm, but to the intolerance of the general community which forces on them secession.

In certain individuals the instinct of submission, whatever be the size or nature of the unit, may be little developed. I had once the opportunity of spending several months on a small island between Australia and New Guinea, the natives of which had been converted to Christianity. Our two servants, inhabitants of this island, were named Jimmy Rice and Debe Wali. The former we heard daily saying his prayers in the kitchen morning and evening. The latter, of a more independent type of mind, had been long ago ex-communicated from the Church for some offence of a sexual nature. He had been forbidden Holy Communion—"eccalisir," as it was called by the natives of the island. But by the time of our arrival his offence had been forgiven and he could have been admitted to Communion, had he chosen to present himself. One day I asked Debe Wali (in the pidgin-English of the island), "Why you no eccalisir?" He replied, "S'pose me like, me eccalisir : s'pose me no like, me no eccalisir !" Such persons want to go their own way in religion. They resent authority and dictation. Unless perhaps they can lead, they have little interest in their fellows. Owing to their independent, self-confident spirit, they suffer no fear of the universe,

feel no humility, no tendency to asceticism. For the same reason they find little attraction in communal worship, in congregational singing, praying or confessing together. Here we see yet another psychological basis for the distinction between those who, like Bernard Shaw's "Saint Joan," stress their own conscience, experience and responsibility and those who rest on obedience to God's sacred laws and to organised institutionalism. The independence of the former and their freedom from humility may go so far as to induce the philosophical position that God needs us almost as much as we need God ; whereas the self-diffidence and lack of self-determination in the opposite type may lead to the craving for a Being of supreme wisdom and goodness in order to escape from the grip of incomprehensible fate or of blind fortune.

In certain individuals the submissive instinct is subordinate to the tender instinct. The former is allied to the feeling of inferiority, the latter centres about a longing to exercise protection or to receive it. The submissive instinct tends to a feeling of insecurity and anxiety ; the tender instinct inspires affection and gratitude. Thus we reach the two antagonistic attitudes towards God—fear on the one side, love on the other. The one conceives God as a stern Ruler, dread King, and Law-giver ; the other as a fond, forgiving parent, as Father. Different individuals will stress one or other aspect according to his mental make-up ; or the same individual will stress now one, now another aspect, according to his passing mood—his spirit of affectionate optimism or of anxious pessimism. A third and important aspect of God rises from our

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feelings of inferiority and our sensitivity to our shortcomings, our conviction of sin and guilt, the comfort of repentance and our yearning for forgiveness and salvation—God as Saviour or Redeemer.

Finally, it seems worth while to present a brief outline of certain experiments which were performed by Bullough and myself¹ in order to investigate types of perceptive attitude in the æsthetic appreciation of colours, tones, combinations of colours and tones, and music. Each of the four types thus experimentally revealed seldom exists wholly unaccompanied by others in any given person ; but one of them usually predominates, sometimes almost to the exclusion of the others. The " objective " type bases its æsthetic appreciation on whether the material presented comes up to the particular standard which we have already established. The " associative " type depends for its æsthetic appreciation on the associations evoked. The " subjective " type is swayed by the acts, sensations and feelings which the object evokes in him. Those of the " character " type personify the object by endowing it with human feelings, temperamental and character traits, not necessarily evoked by the object in themselves. (Thus they may speak of a cheerful, happy, stupid, hopeful colour or of a treacherous, frank, playful or self-confident theme of music.) It is not hard to apply these different types to religious attitude and appreciation. The objective and associative types tend to conservatism, the former also to conscientiousness. The subjective type tends to independence and

¹ See *British Journal of Psychology*, ii., 406-463 ; iii., 406-447 ; vii., 68-111 ; xiii., 52-71.

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to naïve sensualism ; the character type to animism, vague emotionality and mysticism.

And if, in conclusion, we seek the value of such a brief and imperfect attempt at a psychological examination of individual religious differences, that value is not hard to find. By such an examination we become better able to appreciate the various standpoints and attitudes of our fellows, to realise the wide variations in our individual mental constitution, and to be kindly and tolerant towards the outcome of those differences. And we are less likely to continue to act in the tenor of the old story told about two Scottish ministers who, travelling together one day from Edinburgh to London, had been engaged through the journey in a violent altercation on certain theological doctrines really of minor importance. As the train drew near London, one of these ministers tried to end the journey in an approach to friendship, saying, " Well, after all, I suppose that we are each endeavouring to seek salvation along the lines which seem best to us." " Yes," answered the other, who still refused to show the least signs of tolerance, " you are trying to find God in your way, I in His ! "

CHAPTER VII

FREUDIAN PSYCHOLOGY

WHEN I was asked to give an address on the scientific value of Sigmund Freud's contributions to psychology I recognised at once the impossibility of dealing adequately with the subject—in the first place within the compass of an hour's lecture, and secondly without having familiarised myself with the numerous accretions and modifications to which in recent years Freud has been subjecting his earlier views. The latter of these difficulties I have endeavoured to remove, so far as I could. The former will inevitably prevent me from entering into many, I hope less important, details of the subject.

I accepted the invitation from selfish and unselfish motives. On the one hand, I had long wanted to form for myself a more exact judgment of the value of Freud's teachings. On the other hand, I recognised that few had ever made this attempt in any spirit of impartiality or after adequate training in normal psychology. The reaction of nearly all of Freud's followers and opponents has been an emotional one—an "all-or-none" response. Either nothing could be right or nothing could be wrong, within the vast psychological structure which Freud has erected. Such an attitude is the natural result of the play of lower

uncritical levels. Few physicians have had the psychological training to view Freud critically. Medical education is still apparently based on the supposition that only material processes in the living organism are worth studying and that normal psychology and psycho-physical methods have nothing to teach, as if mind did not exist and were of no therapeutic value for general medicine.

Freud himself is not a trained psychologist. Had he been, it is quite possible that his developing genius would have been so stunted by the (now superseded) psychological doctrines of his day, that his brilliant contributions to the subject—of such varying worth—would have been altogether denied to us. Contempt is often Nature's cloak for ignorance; but it is not altogether excusable for Freud to despise or to ignore current psychology because of the errors of its youth. Of him the psychologist might say what Dostoievsky, so I have read, once said of himself: "I am called a psychologist. It is wrong. I am simply a realist in the higher sense of the word; that is, I depict all the dim recesses of the human soul." Unfortunately, the untrained psychologist is only too easy a prey to the prime psychological fallacy—that what he finds in his own mind he assumes to exist in the minds of all others. I suspect that Freud is too often unwittingly depicting "the dim recesses of his own soul," within which affection so clearly conflicts with enmity, generosity with despotism, inferiority with ambition, and the volatile, volcanic temperament of the artist with the conscientiousness of the man of science.

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For Freud has himself stated that throughout his life he has always found the emotional need both for "an intimate friend and a hated enemy,"¹ whether in different persons or in the same person at different times. A few years ago I sent a young pupil to see Freud, who reported to me that when he remarked to Freud that he had just met one of the most distinguished men—let us call him X—who had seceded from the Freudian school, Freud declared himself totally ignorant of X, insisting "ich kenne ihn nicht." Freud's father, it is on record, told a friend that his little Sigmund would never dare to contradict him. As a boy, and no doubt later, he was subject to all the indignities and contempt inseparable from an anti-semitic atmosphere. In my experience a lack of mental balance is notable, too, among Freud's followers, both among his lieutenants and in the rank and file. At least three suicides are on record within the narrow range of Freud's own psycho-analytic circle in Vienna.²

We have to remember that no one can be considered a true psycho-analyst unless he has himself submitted to psycho-analysis, that such psycho-analysis must be conducted by Freud or by one of his more or less immediate lieutenants, and that the process of psycho-analysis necessarily involves what is technically known as "transference," in which certain peculiar relations between the analyst and his subject develop, that

¹ "The Interpretation of Dreams," English trans., third edition, 1913, p. 385. London: G. Allen & Co.

² Cf. "Sigmund Freud: His Personality, his Teaching, and his School," by Fritz Wittels, English trans., 1924, pp. 60, 68, 247, etc. London: G. Allen and Unwin.

invite uncritical acceptance of his views. To these relations I shall return presently.

Freud has thus founded a "school" of which he is the despotic, infallible, quasi-papal head; and to be an apostle of it thus involves the laying-on of hands. As leader of the school he has been compared to the leader of a herd who drives out any members who attempt to usurp his authority. This attitude his enemies ascribe to ambition and intolerance, his devotees to the necessity of protecting his teachings from all risk of charlatanry and pollution. It is not surprising, and certainly not altogether blameworthy, if in framing the many later additions to and modifications of his original views, Freud has at times adopted attitudes closely similar to those which he originally condemned in certain of his pupils who were forced to part company with him. These accretions have been of late so numerous and sometimes so much at variance with his previous views that it becomes difficult to criticise some of them in close detail. Six years ago Freud wrote: "I might be asked whether I am myself convinced of the views here set forward, and if so how far. My answer would be that I am neither convinced myself, nor am I seeking to arouse conviction in others. More accurately, I do not know how far I believe in them."¹

But the airy way in which Freud treats such hypotheses as mere embellishments of decorative value cannot apply to the theory and practice of psycho-analysis. This forms the foundation-stone for all his

¹ "Beyond the Pleasure Principle," English trans., 1922, p. 76. London: International Psycho-analytical Press.

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later superstructure. It arose, as is well known, from Breuer's discovery that cures were possible in psychoneurotics by bringing back to consciousness their repressed memories through the influence of persuasion under hypnosis. Breuer believed that an essential factor in such cures was the release of a hitherto repressed emotional experience—the "ab-reaction" which accompanied the recovery of these forgotten inhibited memories. This process of psycho-therapy was hence called "catharsis." It was employed in the British Army with surprising success on a large number of cases of so-called "shell shock" during the Great War.

But in Freud's hands hypnotic suggestion did not prove uniformly successful. His experience was that hypnosis "conceals the resistance" which the psycho-therapist desires to reveal. He contends that "hypnosis does not do away with the resistance but only avoids it, and therefore yields only incomplete information and transitory therapeutic success."¹ That is not, however, the experience of others who used hypnosis as a rapid method of psychological analysis during the recent war. The hypnotised patient manifested points of resistance where the recovery of lost memories, recent or remote, proved exceptionally difficult, in much the same way as the non-hypnotised patient; and there was no reason to suppose that the cures brought about by such methods of recovery of repressed experiences were transitory.

In Freud's hands the procedure of psycho-analysis

¹ "Collected Papers," English trans., 1924, vol. i., p. 269. London: Hogarth Press.

has undergone certain developments since its origin, but it is unnecessary to describe these here. Its broad principles have remained unchanged. The hypnotic state and the principle of catharsis are replaced by free association and interpretation. The character of the subject's associations and the interpretations of the analyst are employed to recognise resistances and repressions.

Freud's aim in psycho-analysis was much the same as Breuer's—"making conscious the unconscious, removing the repressions, filling in the gaps in memory."¹ That this aim rather than the "catharsis"—the "abreaction," or release of a suppressed emotion—is generally the correct one, there can, I think, be little doubt. What is in dispute is Freud's insistence that psycho-analysis must be carried back to the patient's early memories of from two to five years of age. This, Freud maintains, is essential for true psycho-analysis. It is essential because of Freud's peculiar views concerning sexual development and the relation of sexual activity to the psycho-neuroses. But we must recognise at the outset that other psychotherapists claim equal success in their treatment without extending their analysis so far backwards, and that they are wholly unable to accept Freud's views as to the *invariable* responsibility of infantile sexual conflicts and sexual maldevelopments for the psychoneuroses.

It is noteworthy that Freud's escape from the use of hypnosis may not be so complete as at first sight it appears to be. During Freudian psycho-analysis the

¹ "Introductory Lectures on Psycho-analysis," English trans., 1922, p. 363. London: Allen and Unwin.

patient lies on a couch and is asked "to put himself into a condition of calm self-observation, without trying to think of anything," and then to narrate whatever comes into his mind. But such a state of reverie, bereft so far as possible of self-control, is apt to pass into a condition not far removed from that of light hypnosis. I have known patients at the close of a period of analysis "pulling themselves together" with a start, just as if they were passing from dreamland to the reality of everyday life. In one case I have actually seen the old personality, as it were, suddenly reappear, with total oblivion once more of the suppressed memories which I had been reviving during the analysis.

As has already been mentioned, psycho-analysis does not merely consist in voluntary passive confession. The analyst is ever on the alert to recognise resistances, to interpret and to remove them, and to explain to the patient what his repressions and their distortions mean. In one description of the process of psycho-analysis I remember reading how, while the patient—of the gentler sex—is lying in a darkened room, the analyst's hand is smoothing her troubled brow, as long-repressed memories are revived and interpreted.¹ I do not wish it to be supposed that such are the usual conditions under which psycho-analysis is conducted, but psycho-analysis in the Freudian sense does involve—and it is, according to Freud, essential for success that it should involve—a very special and intimate relation between the analyst and his patient ;

¹ "Contributions to Psycho-analysis," by S. Ferenczi. English trans., 1916, p. 46. Boston, U.S.A.: The Gorham Press.

to this he gives the name of "transference." Freud gives the following examples of this relation as described to him by the patient's friends: "He has quite lost his head over you; he puts implicit trust in you; everything you say is like a revelation to him. . . . It is positively boring the way he never speaks of anything but you; he quotes you all the time."¹ This transference, like all suggestibility according to Freud, depends on sexual attachment. In the psychoneuroses it means (in Freudian language) the gathering together of the whole of the sexual energy which has hitherto been withdrawn from the control of the ego to become attached to the symptoms, and the transfer of that energy to the analyst. Without such transference, says Freud, "the physician and his arguments would never even be listened to."² It "exists in the patient from the beginning of the treatment and is for a time the strongest impetus in the work"³ of psycho-analysis. Sometimes the transference is a negative one, a feeling of hostility towards the analyst; but it is clear that such a relation cannot make for a successful issue. Women patients, we are told by Freud, fall in love with the analyst; men patients (by homosexual sublimation, he supposes) admire him. Having won this transference the analyst's great care, we are told, is to re-direct it, so as not to endanger it.

We may well wonder how far psycho-analysis, as practised by Freud, owes its success to the resuscitation

¹ "Introductory Lectures on Psycho-analysis," p. 367.

² *Ibid.*, p. 372.

³ *Ibid.*, p. 370.

of repressed complexes, how far to the peculiar interpretation, almost invariably in terms of sexuality, which he gives his patients, and how far to the extraordinarily suggestive influence which the analyst comes to exert over his patient because of this "transference." Everyone who has practised suggestion as a method of psychotherapy will have met cases of cure where, later it turned out, the patient did not really even understand the explanations given him, but accepted them by force of suggestion, not of comprehension or reason. I recall a case in which a person under light hypnosis carried out various acts to the amusement of a roomful of undergraduates. On being fully awakened, he declared that he was throughout quite aware of the absurd things he had been doing, but did them "to oblige" the hypnotist. Realising the enormous power of suggestion and Freud's stress on transference, can we from the therapeutic success of Freud's psycho-analysis justifiably infer the truth of his interpretations and of his view of the rôle of sexuality in the psychoneuroses? Can we be sure that Freud is justified in his belief that every neurotic is homosexually inclined; that every neurotic shows in his symptoms a substitute for sexual gratification; that most dreams treat of sexual material and give expression to erotic wishes? ¹

Freud's cardinal error is undue readiness for generalisation. No one will deny the sexual causation of many dreams and neuroses. But most will refuse to admit this as having a general or universal application. So, too—to take another illustration—no one will deny

¹ "The Interpretation of Dreams," p. 240.

that *some* slips of the tongue are due to the mutual interference of two different intentions. "Is this the explanation of all cases of slips of the tongue?" asks Freud. He replies: "I am very much inclined to think so, because whenever one examines an instance of it this type of solution may be found."¹ Still, it may be, he goes on to say, that a slip of the tongue can occur without the agency of this mechanism. So far, so good. But in later years he succumbs to the temptation of rash generalisation. He maintains ultimately that for the occurrence of *any* slip of the tongue the "suppression of a previous intention to say something is the indispensable condition,"² and that "in every case a disturbing group of ideas—a complex—can be brought to light which alters the meaning of the intended speech . . ."³ No one who has had experience of apraxia and of the effects of perseveration and previous association, particularly in experimental work on memory, could accept such a generalisation. Of course, every slip of the tongue has its "cause"; so, too, has every error of the pen, every act of forgetting—if only it could be ascertained. But they are certainly not all ascribable to a conflict between antagonistic intentions or to disturbing complexes.

So, again, none will deny that the so-called "Œdipus complex"—in the sense of a special attachment of the child to its parent of opposite sex—exists, but that it is universally present in the development of

¹ "Introductory Lectures on Psycho-analysis," pp. 34, 35.

² *Ibid.*, p. 52.

³ "Collected Papers," vol. iv., p. 13 ff.

every individual and can always be appropriately termed "sexual" is sheer generalisation based on totally inadequate evidence and opposed by other competent observers. Freud regards the Œdipus complex as the most important conflict which the child has to face. No one, except a confessed psychoanalyst, is likely to admit this, until adequate evidence, obtained by the unprejudiced from a large number of normal children and adults, is available.

The importance of the study of the abnormal can hardly be overestimated, but there is always a risk in applying the results of such study to normal persons. When certain neurological processes are disturbed, the result—*e.g.*, the gait in locomotor ataxy—may have no relation to any behaviour or experience in the childhood of the individual or of the race. If certain children find their way, as Freud avers in all children, from suckling to onanism, if in certain persons the kiss may suffice for sexual gratification, if among sexual perverts other objects and aims become sexual substitutes, even if, in certain normal people, perverse sexual tendencies may arise when normal sexual satisfaction is prevented, we are not justified in concluding, with Freud, that in every normal person sexual perversion is latent or that what rudiments of sexual life exist in the normal child must necessarily be of a perverted order. Admitting the possibility that under certain conditions vicarious organs may be concerned in sexual gratification, we have no right to conclude that the sexual instinct has a manifold source. If sexual feeling may at times irradiate to the anal region, that does not justify us in including this

region among the fundamental origins of sexual feeling.

We may allow that sexual gratification can be regarded in Freudian language as an "organ pleasure"—*i.e.*, as a pleasure derived from the activity of a bodily organ—and we may allow that the infant derives a corresponding organ pleasure from suckling movements in solitude—*i.e.*, in the absence of the mother's breast or milk. But this gives us no right to speak of the infant as enjoying an "oral stage" of sexual development in which its desires are directed, narcissistically, homosexually, and auto-erotically, solely to itself.

Nor are we justified in concluding that the mouth forms part of the apparatus of the sexual instinct, because in sexual perversion it can be employed in arousing the sexual orgasm. As well might the hand be called part of the mechanism of the hunger instinct because it can be employed in satisfying hunger. The mouth may satisfy sexual appetite just as the hand may satisfy the appetite for food. But there is a world of difference between this admission and Freud's ambiguous application of the word "erotogenic" to the oral zone. We have no reason to suppose that in this region the feelings of sexual desire can normally, innately be engendered.

We refuse, then, to follow Freud in his conclusion that because infants perform the movements of suckling "with no other object but that of obtaining pleasure," "we therefore call these areas of the body [mouth and lips] erotogenic zones and describe the pleasure derived from suckling as a *sexual* one."¹

¹ "Introductory Lectures on Psycho-analysis," pp. 263, 264.

We deny that because the child may have a preponderating affection for the parent of opposite sex, this need develop into jealousy, hatred, and a desire to kill the other parent, or that because, say, a girl child may express a desire to marry its father or its mother, this need imply anything more than a tender desire for close and permanent association with the parent. Affection is not necessarily in any sense sexual, neither in character nor in origin. It is to be found among the members of all higher organisms that live in herds ; it is to be found in the tender relations of parents to offspring, not less than in those of offspring to parents. Affection belongs to the protective instinct, and develops both among those who give and among those who receive, whether the latter protection relate to the herd, to the individual, or to the species. There are no grounds, then, for concluding that in childhood "an incestuous love-choice is in fact the first and the regular one." Nor can we conclude that when the child "shows at the beginning of life no disgust for excrement," he is passing from the oral to the anal stage, characterised by curiosity and cruelty, or, to use Freudian language, by sexual inspection and sadism.

A similar criticism is applicable to the so-called "castration complex." No one will deny that some young boys, when they see the female genitalia for the first time, may conclude that castration has occurred in the other sex, and that some young girls may arrive at a corresponding conclusion. But does the evidence warrant our supposing that this is a *necessary* belief occurring in all (or even in most)

children, modifying an equally universal Œdipus complex, and playing an important part in the mental development of the average normal human being?

Both hunger and sexual feeling are what the psychologist terms "appetites." But for Freud the essence of an instinct is that the stimulus should arise within the organism. Consequently he asserts that hunger and thirst are the *typical* examples of instincts, and that sexual desire is likewise an instinct because it arises from distension of the vesiculæ seminales and the like. Freud divides the instincts into sexual instincts and ego-instincts—the species-preservative and the self-preservative instincts. I will not stop to consider how difficult it is, under this classification and definition, to range such clearly instinctive reactions as fighting, constructiveness, self-display, which with their associated affects are as much concerned in preserving the individual as in preserving his species. Nor will I do more than point out in passing that the apparent opposition between preservation of the individual and preservation of his species is biologically unjustifiable. The two are inevitably interdependent, otherwise their respective efficiencies would suffer. Freud is not any happier by his classification of instincts elsewhere into life- and death-instincts, the former making for the preservation of the species, the latter heading for the death and disintegration of the individual, but becoming sublimated, through the agency of the life-instincts, to the "will to power" and cruelty.

Were Freud pressed with the objection that suckling is not a sexual but an ego (or self-preservative) instinct,

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he would retort (as he has indeed said) that it is only later in the life of the individual that sexual instincts are detached from the self-preservative instincts, as—he would say—the stage of auto-erotism (by which he only means interest in the self) passes to the love of (by which again he means merely interest in) external objects. Elsewhere Freud even suggests that all instincts are qualitatively identical. But such a reduction of instincts to an unknowable common origin is, at best, only of philosophical interest and is surely most improbable.

The Freudian doctrines are fundamentally derived from the supposition that all “wishes” and “desires,” by which is psychologically meant all conative activities, of any importance, are dependent on the exercise of the sexual instincts, and that the energy of the whole mental and nervous system is like a fluid which can be dammed up and drained, now in one direction, now in another. I know of no adequate psychological or neurological evidence in support of this view. Freud employs the term “libido” to designate the force by which the sexual instincts achieve expression. Only the sexual instincts have *libido*; the self-preservative instincts have to be content with *ego-interests*. The libido is never changed, we are told, into *ego-interests*. Whether, and if so how, the ego derives its activities, save from those of the instincts which it controls, is left unsaid. Sometimes the libido seems to be an innate instinctive force incessantly battling with the ego. Sometimes it is obscurely described as the investment of energy directed by the ego; at others—*e.g.*, in auto-erotism

—as inflating the ego with its own energy. Sometimes, as in anxiety, the ego is described as flying from its libido; at others as censoring and blocking the discharge of the libido, which is thus withdrawn to the subconscious. Sometimes the ego is regarded as a great reservoir from which the libido flows out and returns.

Such fantastic creations are by no means the sole components of Freud's superstructure which the psychologist must oppose. His belief that pain is associated with increase of excitation and with the damming up of energy, whereas pleasure is associated with opposite processes, is obviously not in full accordance with the facts. His belief that the infant only responds to the "pleasure-principle" and that only later does it follow the "reality-principle," is equally unacceptable. In the first place, it is untrue to suppose that the primary motive of action is the search for pleasure. Pleasure maintains action and re-establishes a situation; primarily, it does not originate action. Secondly, from its very birth the infant is brought to face reality. It cannot suckle just when it likes, it has to submit to the regular routine of toilet, it is put to sleep and awakened at regular hours. There is no stage in its extra-uterine life when it can be said to obey one of the two so-called principles without obedience to the other.

In his justifiable efforts to endow the unconscious with characters different from, and more primitive than, those of the conscious, Freud has practically identified the unconscious with the sexual libido and has urged that both act irrationally merely according

to the pleasure principle. Of late, however, he has seen the necessity of withdrawing from this attitude. Contrasting the ego with the "*es*," as he now calls it—*i.e.*, the conscious self with the unconscious—Freud has been forced to posit an ego-ideal or a super-ego ; in other words, a moral factor dominating the ego, a voice of conscience above the ego, which exercises the same functions as the unconscious censorship (in the "preconscious") exercises on dreams. He has now come to recognise the existence of an "unconscious conscience"—apparently an unconscious state of the super-ego. Indeed, he supposes that the *es*, or unconscious, is the source of the super-ego, although in the service of the super-ego the ego comes into conflict with the *es* in overcoming the Œdipus complex. He also suggests that the super-ego, or conscience, acquires its characteristics of authority and affection, because it is created by the first relations of the libido of the *es*—namely, towards the two parents—when "introjected" into the ego.

Who but a blind follower, totally untrained in psychology, could adopt such a wild, useless farago of generalisation? Freud sees sex everywhere, and attends to little else. Morality arises from the Œdipus complex ; speech is perhaps derived from sexual communication ; suggestion is dependent on sexuality ; obstinacy, meanness, and orderliness in adult life result from the holding back of stools in infancy ; intense burning ambition occurs among those who formerly suffered from enuresis !

It is as easy to deny all this *in toto* as to accept it *in toto*. There are few statements of Freud which

are wholly untrue. But his lack of psychological training, the need to maintain his position as the head of a school and his own brilliant and erratic personality, combine to make his teachings ridiculous in the sight of all free-minded men. Let us take, as a further instance, Freud's exaggerated reliance on symbolism as a means of interpretation. Who can deny that symbolism often provides a source of escape from, a substitute for, unwelcome ideas? But let us examine the lists of symbols given by Freud for the genital organs. For the male organ, the symbols include sticks, umbrellas, poles, trees, knives, daggers, sabres, guns, revolvers, taps, watering-cans, springs, telescopes, nail files, hammers, balloons, aeroplanes, reptiles, fishes, hats and cloaks, machinery, keys. For the female organ, the list comprises pits, hollows, caves, jars, bottles, the mouth, ships, pockets, cupboards, chests, rooms, windows, doors, gates, wood, paper and all other materials, together with objects made therefrom, snails, mussels, churches, apples, peaches, and other fruit, landscape with rocks, gardens, and flowers, jewel cases, and shoes. And these lists are admittedly not complete! With such a vast choice of symbols, what dreams in a normal person, what associations in a case of psychoneurosis cannot be given and assured a sexual significance, when once the analyst has made up his mind to find it?

Is it conceivable that different analysts, laying different stresses on the relative importance of the Œdipus complex, the castration complex, the death instinct, the desire for re-birth, the love of mastery, the play of purposive, prospective functions—all

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accepted in greater or less degree by the Freudian school of to-day—will independently give the same interpretation to the same dream or symptom? That the interpretation satisfies the dreamer or patient is, I repeat, no proof of its accuracy. A man may be convinced of sin without having actually committed it. Days, weeks, or months of daily intimate intercourse with a psycho-analyst, and the increasing influence and prestige (in Freudian language, transference) which he exercises over his subject will lead the latter to accept any system of explanation as satisfactory and correct.

Those who wish to see to what lengths Freud and his followers are prepared to go in bringing such suggestion to play on their subjects should read his published "Analysis of a Phobia in a Five-year-old Boy."¹ So innocent Freud seems of the dangers of suggestion that he can write: "If I say to you 'Look up at the sky and you will see a balloon,' you will find it much more quickly than if I merely tell you to look up and see whether you can see anything."² Freud observes that "an experienced physician does not meet his patients unprepared and, as a rule, asks of them not elucidation but confirmation of his surmises."³ In other words, the psycho-analyst is so certain of his own interpretation of the patient's revelations that his main task is to convince the latter of the truth of them. "Denial at the beginning," says Freud, "should not mislead the physician; every resistance

¹ "Collected Papers," vol. iii., pp. 149-289.

² "Introductory Lectures on Psycho-analysis," p. 365.

³ "Collected Papers," vol. i., p. 224.

is finally overcome by firmly insisting on what has been inferred and by emphasising the unshakable nature of one's convictions."¹

Surely this attitude is the explanation of Freud's earlier insistence that "an infantile history of seduction by adults or other older children" was characteristic of, and chiefly, if not wholly, responsible for subsequent psychoneuroses. A few years later Freud had to admit that many accepted histories of such early seduction were found by him to be purely fictitious and imaginary. Is it not likely that Freud's conviction, based on a few possibly real instances, led him to suggest (no doubt quite unconsciously) to his hysterical patients that they had been violated in early life and that these patients had finally accepted the suggestion? But Freud is satisfied with relating such seduction phantasies—as they turn out to be ("memory romances," as he calls them²)—to the repressed memories of other infantile sexual experiences on which they were founded and to the hysterical symptoms into which these had become transferred.

Members of the psycho-analytical school are equally subject to suggestion, when it assists their faith in their master. To my own knowledge a purely fictitious dream was jokingly related in all seriousness to one of the ablest of Freud's followers. He immediately assumed that it was true and proceeded to interpret it in the light of sexual symbols, just as a servant girl might do by consulting her dream-book. So convinced was he of the truth of the dream and its

¹ *Ibid.*, p. 228.

² *Ibid.*, pp. 272 ff.

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interpretation that he published it in one of the many able essays he has written in defence of the Freudian position !

Take such a dream as the following, offered by Freud, as an example of symbolic interpretation :

" The dreamer met his sister with two friends who were themselves sisters. He shook hands with these two, but not with his sister." We are told that there was an actual episode connected with this in the dreamer's mind. Left to free association, his thoughts passed (under the influence of how much suggestion we can shrewdly guess !) " to a time when his observations led him to wonder why a girl's breasts are so late in developing. The two sisters, therefore, stand for the breasts ; he would have liked to grasp them with his hand, if only it had not been his sister."

Or take the following dream : A woman who had been married for ten years dreamed about herself, her husband, a friend of about her own age and the latter's fiancé to whom she had just become engaged. Freud interprets this dream to mean regret on the part of the woman for having married so early ; had she waited she might have done better. He admits that the dream offered no associations justifying this conclusion ! " . . . the dreamer had not been aware that she had such disparaging thoughts about her husband ; she did not know why she should so disparage him." But " there occurs to us almost spontaneously," says Freud, " the following [*i.e.*, the above] construction of the latent dream-thoughts for which the manifest dream is a highly-distorted substitute " ! Why ? Because in the dream " refer-

ences to time are noticeable at several points ” ; action is “ taken too soon and in too great a hurry.” “ *Going to the theatre* obviously stands for marriage. *Getting the tickets too soon* is, in fact, a direct substitute for ‘ marrying too soon,’ ” because after marriage a woman can see things at the theatre which are forbidden to the unmarried girl ! ¹

We need no further illustrations of the fact that the psycho-analyst is so convinced of many of his interpretations that he feels no necessity to consult his subject. He has no hesitation even in revealing the innermost thoughts and unconscious “ wishes ” in the lives of dead and imaginary characters, Leonardo da Vinci, Hamlet, and others.

Let it not be supposed that Freud’s labours have been in vain and that we must reject all his work because we refuse to accept his wild, unfounded generalisations. No one has done more valuable service than he in insisting on the dynamic conception of mental processes and on the importance of early experiences alike in the education of the normal adult, in dreams, and in the neuroses. He has rightly stressed the principles of fixation and regression—*i.e.*, arrest during development and return to an earlier phase of development—for the light they throw on many mental disturbances. He has greatly advanced psychotherapy by emphasising the enormous influence of repression and censorship and the importance of symbolism. His analyses of the processes characteristic of the dream are of special value,—his description of how the dream is determined by condensation,

¹ “ Introductory Lectures on Psycho-analysis,” pp. 1026-60.

displacement, secondary elaboration, regression, opposite meanings, prominence of visual imagery, etc.

Most people would probably credit Freud with definitely establishing the existence of unconscious mental processes. He himself finds "incontrovertible proof of the existence" of the unconscious—because, forsooth, psycho-analysis "works" and because we need it as an explanation.¹ But we must remember that a hypothesis may still remain a hypothesis, however valuable it may be. I do not myself see how the existence of unconscious mental processes can ever be *proved*. Some reject the unconscious mind because they regard it as inconceivable. But if the notion which it conveys works better than any other, we have as much right to employ it as the physicist has to credit the ether with equally inconceivable characters.

Despite our agreement with Freud in his distinction between "preconscious" and "unconscious" processes, we may justly criticise him for his familiarity with the latter. He claims to know as much about the nature of the unconscious mind as the ordinary religious man claims in regard to the mentality of God. Anthropomorphism in religion is hardly less justifiable than what may be correspondingly termed "egomorphism" in psychology. If nothing is more certain than that the "mental" processes in any existing ultra-human purpose and direction must be quite different from our own, and that it is therefore absurd to speak of God's feelings, wishes and motives in human terms, we must also realise the impossibility of speaking, as Freud does so confidently, of unconscious ideas,

¹ "Collected Papers," vol. iv., p. 98 ff.

unconscious wishes, and the like in terms of consciousness. If only Freud had taken the trouble to define more adequately what he meant by wishes, by ideas, and indeed by sexuality, instinct, anxiety, love, and other terms, and if only he had endeavoured to abide even for a few consecutive years by these definitions, how different would have been the result! But we should have exchanged the wild visionary, the inspired seer, for the duller, more temperate man of science.

Let us, then, not part from our subject without giving Freud his due. In him we recognise a great genius who has contributed vastly to the advance of psychopathology, but whose inspirations have been tainted by his peculiar temperament and have not been adequately controlled by critical intelligence and by a knowledge of normal psychology. A brilliant theory, even if it be wrong and impossible, has a stimulating influence in arousing opposition and in encouraging the discovery of new facts that will refute it. The pity is that its acceptance is often so wrapped up with suggestion, faith, and worship that an appeal to reason becomes ineffective.

CHAPTER VIII

INSTINCT AND INTELLIGENCE

INSTINCT and intelligence are generally regarded as two distinct modes of mental activity. In the following pages I hope to give adequate reasons for abandoning this view. I shall endeavour to show that instinct and intelligence are everywhere inseparable, and that in every so-called instinctive or intelligent act, a concomitant aspect of intelligence or instinct can be displayed. I regard the separation of instinct and intelligence as a purely artificial act of abstraction—convenient, no doubt, for the purposes of psychological science, but resulting merely from regarding mental behaviour from two different points of view. So far as instinctive behaviour can be regarded from the standpoint of the individual experience of the organism, it appears, however imperfectly, as “intelligent,”—characterised by aim and end. So far as intelligent behaviour can be regarded from the standpoint of observing the conduct of other organisms, it appears, however imperfectly, as “instinctive,”—characterised by innate mechanisms. Thus intelligence and instinct, finalism and mechanism, are equally true and valid; they are our necessarily “anthropo-psychic” interpretations of one and the same problem regarded from different standpoints.

It is generally supposed that intelligence and instinct are distinguished from each other by two principal characters. One of these consists in consciousness or unconsciousness of end, the other in plasticity or fixity of reaction. The common assumptions are (1) that in typically instinctive behaviour the organism is wholly unaware of the end thereby to be attained, and (2) that such behaviour is unalterable and from the very outset perfect. But it appears to me that neither of these criteria is altogether satisfactory.

I shall begin by considering the instincts of animals, treating them first from the psychical or subjective aspect. The old view that instincts are merely "complex reflexes" dies hard. Even Professor Lloyd Morgan, if I understand him correctly, hesitates to relinquish it. He has described the consciousness that is involved in a chick's *first* peck at food as consequent on the act, not as simultaneous with it. "On this one occasion the accompanying consciousness arises wholly by backstroke."¹ And since then he has expressed his belief that all a moorhen chick experiences when swimming for the first time is "a specific presentation, a specific response, a specific emotional tone, all coalescent into one felt situation."² Now surely, even on the very first occasion of the functioning of an instinct, there is something more than this, something which distinguishes an instinct from a reflex. As Professor McDougall rightly insists, every instinct has its "conative aspect"³; in other words, it is accom-

¹ "Habit and Instinct," London, 1896, p. 135.

² *Brit. Journ. Psych.*, 1909, vol. iii., p. 13.

³ "An Introduction to Social Psychology," London, 1908, p. 26.

panied by a feeling of activity. We cannot, I think, doubt the existence of this "aspect" or "feeling," nor can we derive it, as I understand Professor Lloyd Morgan to do, from afferent impulses of visceral origin.¹

But there is even more than this "feeling of activity" at the very first performance of an instinct. There is another element, which, so far as I am aware, has hitherto been completely ignored. To my mind it is certain that, on the occasion of the chick's first peck or the duckling's first swim, the bird is dimly, of course very dimly, conscious of the way in which it is about to act. I believe this, because no organism can ever execute a new movement which does not involve other movements that have been performed previously. A completely new movement is as impossible as a completely new thought. When a chick first attempts to peck, many of the muscles then called into action must have been contracted before. Thus the feeling of activity arising on the occasion of a chick's first peck is not altogether a new one. It is related, as each of our own experiences is related, to past experiences. And the very vague awareness of results which is associated with those previous feelings of activity gives the chick a vague awareness of the result of its first peck, *before* it has actually performed the action. Such awareness is, of course, rudimentary in the extreme. The chick or duckling cannot then—or indeed ever—be aware of the aims of its instincts, as we are aware of them. But it is important to note what rudimentary consciousness of this kind exists, and indeed, as

¹ *Ibid.*, pp. 137, 139, 140.

Prof. Stout has pointed out, *must* exist. For how could an instinct be better performed on the second occasion, unless some vague notion of aim and meaning accompanied its first performance?

The question arises—are instincts of all kinds and in all circumstances characterised by these rudiments of conation and meaning? I think that they are absent under two conditions only, first, if the instinct has been repeated sufficiently often; secondly, if the instinct is from the first unalterable by later experience. But I would suggest that the same word instinct cannot be suitably employed to embrace, in addition, either of these conditions. For from the standpoint of individual experience, the first few times of performance of an instinct must be very different from the thousandth time of performance; the instinct has become a “habit.” And an instinct which is from the first unalterable is, as I shall immediately urge, nothing but a reflex.

Having attempted to show that the subjective aspects of so-called instinctive and intelligent behaviour differ in degree and not in kind, I turn now to consider the alleged difference in their objective aspects—the fixity of instinct, the plasticity of intelligence.

An instinct has been defined as “a complicated reaction that is perfect the very first time.”¹ I question whether this is ever literally the case, if only the reaction could be submitted to close enough examination. Young birds usually learn to fly and to sing by imitating their elders. Even the young of ants, where

¹ H. Driesch, “The Science and Philosophy of the Organism,” Gifford Lectures (Aberdeen), 1908, p. 110.

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"instinct" is considered to reach its highest development, have been observed to learn by imitation from older ants.¹ Instincts are almost always modifiable and perfected by later experience. Indeed, a "perfect reaction" is apt not to need subsequent modification. It can adequately be worked by mechanism. Consciousness, especially those elements of conation and meaning which we have just been considering, will become unnecessary, nay, must even prove disadvantageous. A reflex is the nearest example of such a condition. (But even a reflex proves to be not "absolutely" fixed, and may prove to be not "absolutely" unconscious. All that can be said is that its central consciousness, if present, is always a *terra incognita*, never communicable to the Ego of the organism.) From the point of view of definition, it would be better to call the flight of moths towards a lamp a reflex, not an instinct; no amount of experience alters the reaction.

Nor do different individuals of the same species or the same individuals on different occasions show that uniformity of action, which has been often regarded as characteristic of instincts. Take, for instance, the following observations by Mr. and Mrs. Peckham on the habits of solitary wasps, which, with some of his remarks, I quote from Professor Hobhouse.²

"When the provisioning is completed the time

¹ E. Wasmann, "Comparative Studies in the Psychology of Ants and of Higher Animals" (English trans.), St. Louis, 1905, p. 68. Cf. also Lloyd Morgan, *op. cit.*, p. 131.

² "Mind in Evolution," London, 1901, pp. 68, 70. Cf. also G. W. and E. G. Peckham, "Wasps Social and Solitary," Boston, 1905.

arrives for the final closing of the nest, and in this, as in all the processes of *Ammophila*, the character of the work differs with the individual. For example, of two wasps that we saw close their nests on the same day, one wedged two or three pellets into the top of the hole, kicked in a little dust and then smoothed the surface over, finishing it all within five minutes. This one seemed possessed by a spirit of hurry and bustle, and did not believe in spending time on non-essentials. The other, on the contrary, was an artist, an idealist. She worked for an hour, first filling the neck of the burrow with fine earth which was jammed down with much energy, this part of the work being accompanied by a loud and cheerful humming, and next arranging the surface of the ground with scrupulous care and sweeping every particle of dust to a distance. Even then she was not satisfied, but went scampering around hunting for some fitting object to crown the whole. First she tried to drag a withered leaf to the spot, but the long stem stuck in the ground and embarrassed her. Relinquishing this, she ran along a branch of the plant under which she was working, and, leaning over, picked up from the ground below a good sized stone, but the effort was too much for her, and she turned a somersault on to the ground. She then started to bring a large lump of earth, but this evidently did not come up to her ideal, for she dropped it after a moment, and, seizing another dry leaf, carried it successfully to the spot and placed it directly over the seat. . . .

“ ‘ Presently she [in this instance a specimen of another species, *Pompilus scelestus*] went to look at her

nest and seemed to be struck with a thought that had already occurred to us—that it was decidedly too small to hold the spider. Back she went for another survey of her bulky victim, measured it with her eye, without touching it, drew her conclusions, and at once returned to the nest and began to make it larger. We have several times seen wasps enlarge their holes when a trial had demonstrated that the spider would not go in, but this seemed a remarkably intelligent use of the comparative faculty.'

"Whatever the correct interpretation of this last observation, enough has been said to show that these wasps adapt means to ends in a way suited to the individual occasion. They are by no means confined to a series of reactions evoked with mechanical uniformity by a uniform stimulus. On the contrary, they are able to deal within limits with each emergency presented by the individual differences of the prey they have captured."

We have already called attention to the fact that even ants are capable of learning from their elders. But this power of learning, or at all events of learning by experience, is by most psychologists considered a sign of intelligence.¹ If so, the very humblest forms of animal life appear to be intelligent. The protozoon *Stentor*, for example, first reacts to a fall of powder by turning aside. Should this action not bring it beyond reach of the powder, it reverses the direction of its ciliary movement. If it still fails to be successful, it withdraws into its tube. Finally, if the fall of

¹ Cf. M. F. Washburn, "The Animal Mind," New York, 1908, p. 19.

powder continues, the organism detaches itself from its support, and swims away to another. When, after a short interval, the fall of powder is repeated, the organism starts at once with the fourth reaction, instead of proceeding through the three previous stages which have proved ineffective.¹

It may be urged, however, that the essential objective features of intelligence are "the novelty of the adjustment and the individuality displayed in these adjustments."² But novel adjustments are observed where the influence of intelligence, as generally understood, would doubtless be disputed. Professor Forel brought back to Europe a number of Algerian ants, which build their nests with a wide entrance in their native country. In their European home these ants found that their quarters were continually infested with the common ant. So they set to work to close the wide entrance of their nest.³ Or again, a dung-beetle, rolling its dung-ball along the sand, finds itself in a hollow, the sides of which are too steep for the ball to be pushed up from below. So the beetle butts down the sand at one side "so as to produce an inclined plane of much less angle."⁴ We are of course free to believe that in such cases there is no true "novelty of adjustment," that the mode of reaction was already innate in the organism, only waiting for the rare situation which might evoke it. But my contention

¹ H. Jennings, "The Behaviour of Lower Organisms," New York, 1906.

² Lloyd Morgan, "Animal Life and Intelligence," London, 1891, p. 458.

³ "L'Année psychologique," 2^e Année, 1895, p. 41. Cf. also Wasmann, *op. cit.*, p. 142.

⁴ Lloyd Morgan, *ibid.*, p. 368.

is that such a belief, if adequately elastic, is as applicable to intelligent as to instinctive behaviour.

I will now indicate the position so far reached. Instead of defining instincts as "complex reactions which are perfect the very first time," I have endeavoured to show that they are all within very variable limits improvable by practice or by imitation, or are modifiable by changed conditions of environment. Further, in place of the usual definition of instincts as merely "fixed innate activities," I have maintained that the essential mental concomitants of instincts are the feeling of activity and a vague consciousness of the behaviour to be achieved. I would urge that the existence of these central factors proclaims the presence of intelligence throughout instinct, and that, as the organism becomes endowed with an increasingly larger number of mutually incompatible modes of reaction, the "intelligent" aspect apparently comes more and more to the fore while the "instinctive" aspect apparently recedes *pari passu* into the background.

It is proverbial that the ordinary person, if asked whether *man* has instincts, replies "No. The behaviour of animals is regulated by instinct. Man is moved by intelligence, by reason." With one accord, however, psychologists insist that such early human acts as suckling, crying, crawling and walking, are instincts, and that even later acts are of like nature, *e.g.*, the "sexual appetite." Others add to this list enormously. In one book¹ I find enumerated the

¹ E. A. Kirkpatrick, "The Fundamentals of Child Study," New York, 1903.

instincts of imitation, curiosity and play ; the expressive, æsthetic, moral and religious instincts ; the parental and social instincts ; the collecting, constructive, destructive and fighting instincts. May we not complete the list by adding the instincts of thought, reason, intelligence ?

This difficulty in delimiting the human instincts arises from the criteria employed. Evidently these are : (1) What instances of human behaviour are analogous to the recognised instincts in animal life, and (2) what lines of conduct are common to all, or to large numbers of, mankind ? The criteria are hence objective. But in man, at least, there should be no difficulty in substituting a subjective criterion, thus avoiding the notorious errors of interpretation arising from the former method. It should be easy for man to be able to describe the difference which he himself experiences when acting instinctively and when acting intelligently.

Herein, I believe, is the root of the difficulty. Man is never aware that he is acting instinctively ; and on this account he naturally denies instincts to himself and his fellows, while ascribing them to animals. When a mother sacrifices her life to save her child, does she recognise that she is acting instinctively or unintelligently ? At the dawn of the sexual appetite—or even earlier, say at the first exercise of the walking instinct—can we be said to have any cue which informs us that we are not acting intelligently but instinctively ? From our own introspection we can only answer negatively.

. It may be urged, on the one hand, that the human

organism, when acting instinctively, achieves "its end under the driving power of the instinctive impulse awakened within it,"¹ bringing his intelligence to bear as best he may, so as to satisfy that end. But is this impulse *always* felt as such, and does it when present appreciably differ from other forms of impulse which would not generally be classed as instinctive? Stress, on the other hand, may be laid on the fact that "each of the principal instincts conditions . . . some one kind of emotional excitement, whose quality is specific or peculiar to it."² But instinct is not to be identified with emotion; the former is not the necessary or universal condition of the latter. Thus neither instinctive emotion nor instinctive impulse appears to help us in differentiating instinct from intelligence. And we reach the same conclusion in the case of man as we have already reached in the case of animals, that instinct and intelligence are inseparable.

The difference between animal and human intelligence is at first sight, and by many, considered fundamental. One may argue as extremely as Father Wasmann, for example, that "intelligence . . . exclusively signifies the power to act with deliberation and self-consciousness," but that "animals have no intelligence at all. If they were gifted with a spiritual power of abstraction, it would necessarily be manifested in their outward actions, especially by the formation of an arbitrary phonetic or graphic language. Animals, however, have no language; hence they have

¹ McDougall, *op. cit.*, p. 40 (footnote).

² *Ibid.*, p. 47.

no intelligence.”¹ According to this view, we separate human from animal intelligence and identify the latter with instinct. Now to discuss the relation of human and animal intelligence is obviously beyond the scope of this paper. At all events, in the present state of comparative psychology, a decision on the subject is impossible. My belief is that the difference between human and animal intelligence, great as it is, is one of degree rather than of kind. I believe that we may recognise in animal life occasional dim flashes of those higher “spiritual powers” which are in full flame in the human mind.

Lastly, there remains the consideration of instinct and intelligence from the broader standpoints of evolution and philosophy. Three different views of psychic evolution have been advanced, corresponding to the better known ones of somatic evolution. The first ascribes reflexes, and in the usual sense instincts, to the degradation of behaviour which has been intelligently, purposefully acquired in the ancestry of the organism. The second view also accepts the heredity of acquired mental “dispositions,” but attributes their acquisition to the environment instead of to an all-wise intelligence. The third attributes psychic evolution to variations in the germ plasma which are preserved by natural selection. There is little or no evidence in favour of the first of these views. The second (a Lamarckian) view is still hotly disputed. Only the third (or Darwinian) view meets with definite acceptance among psychologists as among biologists.

¹ “Comparative Studies in the Psychology of Ants and of Higher Organisms” (Eng. trans.), St. Louis, 1905, pp. iii., 198.

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By its acceptance, however, we may appear to be giving ourselves up to a wholly mechanical interpretation of the evolution of mind. I have therefore attempted in conclusion to show that there is scope, as well as need, for the finalistic interpretation also.

For each of these two interpretations is traceable to our experience of activity, finalism to our experience of subject-activity, mechanism to our experience of object-activity. Each of them, too, comes to be extended beyond its sphere of origin. We extend the mechanistic interpretation to ourselves when we recognise that if all the conditions determining our behaviour were but given, one result and no other could issue therefrom, and that if only we could know all those conditions and had already observed their result, we could confidently predict the resulting behaviour. Such admissions do not conflict with our recognition that very often our actions cannot thus be predicted, that they are devised to attain ends, and that those ends are of our own making. This two-fold interpretation of his behaviour each of us recognises within himself. He extends it also to his fellow-men. The question arises whether he is justified in extending it also to the behaviour and the evolution of living and lifeless objects generally.

From one point of view, certainly, we cannot avoid applying the finalistic interpretation to these objects, inasmuch as without it nature would be meaningless. We have just insisted that mechanism can only predict the result of given conditions, provided that a like result of like conditions has been observed already. Without previous experience, mechanism could never

foretell that hydrogen and oxygen would yield water. It can never foretell the apparent discontinuities in evolution or the paths of history. Further, mechanism has no concern with ends, yet our mind finds evidence of finalism everywhere. Each piece of behaviour appears adapted for an end. Ends appear already framed in organisms which have no apparent power of framing ends for themselves.

We find that the non-nervous tissues of living objects are often possessed of a variety of methods, any one of which will serve to reach one and the same end, in cases, for example, of injury after which regeneration starts in one of several possible methods to reach one and the same result.¹ It is indeed in the degree of adaptability to all possible disturbances that the psychical is distinguished from the non-psychical, the physiological from the physical, and, we may add, the entire Universe from that pure abstraction—purposeless mechanism. For ends exist not only in Life but throughout the Universe, if only we view the Universe as a huge organism; the difference lying only in the size of the system and in the breadth of the subjective outlook.

With the dawn of life, ends begin to form within individual living organisms. With the dawn of instinct and intelligence, awareness of these ends within individual experience develops, as I have attempted to show earlier in this paper; and ultimately, with increasing mental complexity, there is not merely this

¹ Cf. the striking examples given by H. Driesch in "The Science and Philosophy of the Organism," Gifford Lectures (Aberdeen), 1907, pp. 159-161.

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awareness of ends, but finally also distinct awareness that they are ends, and an increasing power to modify and frame fresh ends. This is the subjective, finalistic, intelligent factor which is inseparable from its objective mechanistic analogue, instinct, and develops with it.

I conclude, then, that instincts are not, as has been generally supposed, identifiable with reflexes ; nor are they, as others have urged, a *tertium quid* beside reflexes and intelligence. According to my view and my use of the words, instinct regarded from within becomes intelligence ; intelligence regarded from without becomes instinct. Intelligence enters into so-called "instincts," and instinct enters into so-called "intelligence." The so-called "instincts" and "intelligence" differ in degree, not in kind.

CHAPTER IX

INDUSTRIAL PSYCHOLOGY AND PUBLIC HEALTH

INDUSTRIAL Psychology is now a recognised subject—alike as regards academic study, research, and practical application. It has its own university diploma, its university lecturers, its research-workers, and its field-investigators. In certain aspects of public health at the present day a knowledge of *part* of the field covered by industrial psychology is already clearly necessary. And, as will be shown in this chapter, with the ever-widening conception and scope of public health, the *whole* of industrial psychology must ultimately enter into the equipment required for success in its fuller future aspects.

In the course of time we shall come to recognise that the maintenance and promotion of public health is not confined to Government or municipal officials. So long as any person is concerned in maintaining and promoting the health of a definite *group* of people within a given geographical *area*, primarily for the benefit of the general community, he will be regarded as engaged in public health work, whether he be appointed by a Government department or local authority, or by a large industrial concern. The *group* may be only a small one—students in a school or

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workers in a factory—or one far larger. The *area* may be so large as to embrace even the whole civilised world, as in the internationally co-operative regulation of epidemic diseases. And the worker in public health may be medically or legally qualified, or expert in only some narrower aspect of the subject—in aftercare, almoner's work, water analysis, etc.—or in industrial psychology ; his salary need not be paid out of public funds.

It is one of the principal duties of medical officers of health, as described in 1925 by the Ministry of Health,¹ “ to acquire an accurate knowledge of the influences, social, environmental and industrial, which may operate prejudicially to health in the area, and of the agencies, official or unofficial, whose help can be evoked in amelioration of such influences.”

Now, not only is industrial psychology primarily concerned in the study of and improvement of many of these “ influences, social, environmental and industrial, which may operate prejudicially to health,” but there are two “ agencies ” existing in this country, the one official, the other unofficial, whose staff of industrial psychologists “ can be evoked in amelioration of such influences.”

It must be realised at the outset that industrial psychology is neither concerned merely with *industry* nor merely with *psychology*. The word “ industry ” here means *any occupation whatever* ; moreover, it relates not only to the occupation itself, but also to preparation for the occupation—covering, *e.g.*, pre-

¹ “ Memorandum on the Duties of Medical Officers of Health in England and Wales ” (H.M. Stationery Office).

vocational education, vocational guidance, vocational selection and vocational training. By vocational guidance is meant advising a person as to the most suitable occupation for him ; by vocational selection is meant choosing the most suitable of applicants for a given vacancy in any occupation. And the word " psychology " includes relevant " physiology "—the higher embracing the lower, just as physiology includes relevant chemistry and physics ; for living body and mind are so closely and inextricably related that their separate study in the intact organism is quite impossible.

Industrial psychology, therefore, is fundamentally concerned with occupational life. Its aim is to determine and to institute conditions which will yield the best possible combination of physical health and mental happiness with physical skill and mental efficiency.

Of the two " agencies " concerned in this work, one is called the Industrial Health Research Board, a Government body working under the Medical Research Council, and employing a staff of research workers and investigators, most of whom have been trained in industrial psychology. Within a given industry, or throughout industry generally, a single subject is selected for their investigation—*e.g.*, the problem of monotony, illumination, rest-pauses, posture, or the psycho-neuroses in industry ; and a report on it is finally issued by H.M. Stationery Office.

The other " agency " is a purely voluntary association, the National Institute of Industrial Psychology—voluntary in the sense that it is dependent for its

support entirely on outside assistance, receiving no financial aid from the Government. It is likewise engaged in conducting and publishing research work, which so far has been mainly in relation to vocational guidance and selection. But, in addition, it carries out private investigations and examinations for industrial firms, Government departments, and private individuals, for which it receives payment. Thus part of its staff of industrial psychologists is occupied in determining, and in actually introducing, conditions which will improve the efficiency, health and contentment either of the workers in a particular factory, mine, mill, office, or (as when vocational guidance is given) of a particular individual who applies for advice.

Much of the complete history of public health is bound up with the history of voluntary organisations which, as their value has been proved, have been subsequently taken over by public bodies. The field of work of the National Institute of Industrial Psychology is proving so successful and so important that a similar development will probably arise. The "public" bodies taking over this work may often be the firms themselves. For in these days of extensive rationalisation and of boards of management where the interests of the employees, and (as in public utility concerns) even those of the consumers, are coming to be represented, the huge amalgamations of industries do not differ widely in many respects from public bodies. Such enormous concerns, each giving work to many thousands of persons, are as deeply interested as any health authority in promoting both mental and physical health—*e.g.*, by the employment of welfare

workers, the provision of dental and ophthalmic clinics, and attention to conditions of the nose and throat ; for they recognise that mental and physical health is essential for industrial efficiency.

Thus it is that firms are beginning to turn to industrial psychology—taking on the National Institute's investigators to fill the higher ranks of management, sending members of their staff to be trained at the Institute, or even starting special departments for industrial psychology in their own factory. In this country such departments have been concerned mainly in the selection of personnel for different kinds of work and in determining the best methods of work and the fairest rates of payment. But in the United States industrial psychology has been also of late applied, by two large concerns at least (a big store and an important electrical company), in ascertaining and remedying the mental maladjustments of the workers—their grievances, imaginary and real, and the causes of their irritation and anxiety, both industrial and domestic ; that is to say, in studying and alleviating (largely by judicious conversation and by ease or removal of the causes of conflict) all those signs and symptoms which make for unrest and “ nervous breakdown.”

It is not adequately recognised how often bodily disorders, labelled and isolated as organic diseases, are really “ psychogenic ” and are hence remediable, in their early stages at least, by psychotherapeutic measures. Many cases of asthma, cardiac and digestive disturbance, and menstrual disorder are illustrations of this fact. Miner's nystagmus is rarely observed in well-lighted mines ; it is undoubtedly

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related to the fear and anxiety produced by the dangerous conditions and the mental strain, which are associated with the wretched glimmer of the miner's safety-lamp. Again, telegraphists' cramp occurs with negligible frequency in the United States, although the speed required from the telegraphist is said to be higher in America than in Great Britain. But there telegraph companies rank like any other private industrial concerns, and consequently the anxious or unhappy maladapted telegraphist is free to escape from engagement in one company to engagement in another company or to any other occupation, instead of being virtually bound and tied, as in this country, to the "safe" but restricted career of a servant in one narrow branch of the Civil Service.

So long as industrial psychology is employed, as it is, not to speed-up the worker, but to study the obstacles, physical and mental, that prevent him from giving his best, so long as it is employed, not to place the physically or mentally unfit on the scrap-heap, but to improve and to maintain his physical and mental health and to direct him into occupations for which he is best fitted, it is carrying out, in the first place, work which will be approved by all classes of the community, and, in the second place, what is, in essence if not in name, public health work.

At present, so far as the occupational selection of individuals is concerned, the actions of our Government are limited to compelling the rejection of women and young persons under sixteen who are *physically* unfitted for employment in factories and workshops, and of men who are *sensorily* unfitted (*e.g.*, through

colour-blindness) for certain employments, namely, locomotive driving and seamanship. It is only just beginning to enforce the elimination of some of those (notably the maimed, the semi-blind, and the epileptic) who are obviously unfitted to drive a motor vehicle. But hitherto it has done little or nothing in regard to other causes of unfitness for various kinds of employment.

Public health has not yet recognised, and education has done relatively little yet to prevent, the vast disturbances in mental and physical health which arise from the "square peg" being forced into the "round hole." In a recent address to the Public Health Congress the Minister of Health rightly stressed the importance of clean air, clean food, clean water, and clean streets. But public health has yet to appreciate the value of a healthy mind, how much can be done to *improve its healthiness, and how closely it is interwoven with bodily health, not merely in being produced by, but also in producing, a healthy body.*

Public health has not recognised, nor attempted to deal with, the vast number of industrial accidents that arise, not from unsafe physical and mental conditions, but from the employment of individuals who are especially prone to accidents. It is now known, thanks originally to the work in this country of Professor Major Greenwood, that accidents are not distributed uniformly over those of the working population who are equally exposed to accidents. In a sample of 200 men of ample experience and maturity in the service of the Boston Elevated Railway Company, one-half of all the accidents happened to only one-fifth of the motor men.

Accidents are, therefore, largely confined to certain "accident-prone" individuals, who should be early detected and eliminated as a danger, not only to themselves, but to their fellow-workers and others. Such procedure for accident reduction is as important a part of "preventive surgery" for public health as any branch of "preventive medicine."

Public health performs a useful service in reducing the dangers of machinery by fencing it with guards; but, in the experience of the National Institute of Industrial Psychology, the remedy may sometimes be worse than the disease. For not infrequently the workers do not like these guards and try to "get round" them; in a considerable number of cases they are an irritant and a hindrance to the worker. They might be very much better contrived, and often *are* much better contrived after various trials and errors—and risks of accident.

Apart from these actual dangers which it should be the duty of the machine designer to anticipate, too commonly the latter neglects, when he designs his machine, the worker's efficiency, health and comfort by placing controls and pedals in positions which involve an awkward, or even an unhealthy, posture on the part of the worker. At least one case is on record of a machine in which one lever was placed at one end of it and one at the other, and the worker was forced to walk up and down all day between the ends of the machine to manipulate these controls; whereas with a little care in design there should have been no difficulty in placing both levers midway. But the designer had not thought of the worker who had to use

the machine. Again, in the case of presses, it is quite common for the pedal to come down with a sudden jar on the ground. The shock thus received several thousands of times daily by the worker could easily be remedied, and is sometimes remedied, but in many cases it remains neglected. Here, as elsewhere, no hard and fast line can be drawn between extreme discomfort and actual danger to health.

It is said that only one-third of industrial accidents is attributable to machinery, and of this third only one-third is said to be preventable by guards. If this be true, one might argue that some 90 per cent. of industrial accidents involve the human factor—at all events, to some extent. Consequently the importance of the study of the worker can hardly be over-emphasised, and the directions of this study will now be indicated.

The first is the study of the “accident-prone.” How is it to be conducted? A highly interesting series of inquiries has been recently conducted in America, where careful studies of each accident-prone individual have been made. What kind of accident, it is asked, is that particular man or woman likely to have? Often the accident is found to be of a special kind for a special person. What is the cause of this peculiarity? To determine this, the “accident-prone” is investigated on the medical side, the social side and the psychological side; and with the information thus provided, instead of straightway removing the men, the management tries to re-educate them. This has been done by the Cleveland Railway Company in America, where the accident rate has thus been reduced by 42·7 per

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cent. And on the Milwaukee Electric Railway, where similar investigations have been conducted, thirty-three accident-prone men have now 81 per cent. fewer accidents than before—surely a very satisfactory result.

The second direction of study is that of general accident frequency. As may be well imagined, accidents are found to occur most commonly among the least efficient of the workers, and hence among the beginners. Mr. Eric Farmer's investigation, which is published in the 55th Report of the Industrial Health Research Board, indicates a striking correlation between frequency of accident and ill-success in some of the selection tests which he applied. He finds a difference of 48 per cent. in accident rate between those who "passed" and those who "failed" in certain combined tests. Thus it would appear that such selection tests are valuable as a means of eliminating not only those who are likely to be inefficient, but also those who are likely to have accidents, at their work. Mr. Farmer also finds that when the criterion is a combination of the selection tests and of the entrance examination, the accident rate of the worst 25 per cent. is about two and a half times as great as that of the remaining 75 per cent. Similar results have been obtained abroad. On the Berlin Tramways, for instance, fifty drivers who had been selected by psychological tests showed in one year 40 per cent. fewer accidents than an equal group not thus selected. And on the Milwaukee Electric Railway selection tests reduced the frequency of men discharged for accidents from 14.1 to 0.6 per cent.

Last comes the study of the best methods of training

beginners, they being, as we have seen, especially liable to accident. Here the demonstration of danger-points and of dangerous situations and instruction how to act in specified emergencies are clearly of great importance.

Industrial psychology, which, as I have shown, includes industrial physiology, is also concerned in the study of effective illumination, temperature and ventilation. The relations of these to general health and to accidents need no stressing. It is not merely the *amount* of illumination, not the mere mechanical, *physical* candle-power which needs to be considered, but also the *psycho-physiological* effects of glare, contrast, angle of incidence, shadows, etc., and the adequate illumination at the actual working point of the worker. The contrast between stepping out of the powerful lights of a railway yard into their dark surroundings clearly constitutes a danger-point for accidents. Even in the best artificial lighting more accidents occur than in good daylight. In one factory, where the accidents occurring between 5.30 and 6 p.m. were compared with those occurring between 3.30 and 4 p.m., the former were only 16 per cent. more frequent than the latter in summer, but were 128 per cent. more frequent in winter; and the most important difference here conceivable is that of the duration of daylight.

Not less interesting is the discovered dependence of accident frequency upon the temperature of the environment. In one factory accidents were fewest at 67 degrees F., but were increased by 30 per cent. at 77 degrees and by 17 per cent. at 56 degrees. In

another works probably the same fact is indicated by the observation that during the six winter months there were seven times the number of accidents that occurred during the six summer months. But here seasonal differences of illumination enter also.

It is hardly necessary to allude to the importance for physical and mental health of screening the worker from exposure to excessive heat or from exposure to obnoxious or disagreeable fumes and dust. Our ideas of ventilation have been profoundly modified within recent years by the work of Sir Leonard Hill. We now know that it is not so much the *composition* of the air as its *movement* that is all-important for effective ventilation. The study of illumination and ventilation necessitates a training in the use of such apparatus as the photometer and the katathermometer. In their use certain public health officials doubtless must in the future, if they do not at present, receive instruction.

But in other fields of industrial psychology public health officials are at present wholly untrained. The medically qualified officer—indeed, the medical student generally—usually receives no training whatever even in *normal* psychology. The normal mind—all that we know about it and about its many important departures from normality—might be non-existent, so far as medical education is concerned. Yet, the very day after he has qualified, the young practitioner may be confronted with the problem of a definitely or doubtfully mentally defective patient !

The factory inspector is at present expected to look into the general working conditions and into the provisions for welfare in a factory which he visits.

But in the future, as public health advances and as instruction in industrial psychology spreads, is it not certain that he will be required to declare that in certain "shops" of certain factories there is over-speeding, or muscular or mental overstrain, or ill-designed machinery, or badly arranged hours of work, or mental maladjustment due to bad industrial relations, any one of which is dangerous to the health of the little community engaged there? We have already psychologists appointed by educational authorities, and we are likely in the near future to see careers masters and expert vocational advisers attached to schools—all with the object not merely of increasing efficiency and diminishing waste of time, effort and material, *but also ultimately with the object of improving public health.* What holds for educational psychology surely holds, likewise, for its intimate neighbour, industrial psychology. It, too, is assured in the future of an increasingly important *rôle* in the field of public health, especially when the latter is conceived in the wide sense in which it is here defined.

CHAPTER X

HINDRANCES TO OUTPUT

It is not my personal experiences merely that I am about to describe here, but also the experiences of the investigating staff of the National Institute of Industrial Psychology with which I am concerned. These experiences now range over many years, and relate to more than 200 different firms in a very large variety of industries. In the course of this experience the investigators have become extraordinarily intimate with the workers. For example, in the coal mines, the investigators left their homes at five o'clock in the morning, dressed like the men, and often engaged in the work at the coal face.

I cannot, of course, be expected in this place to deal with all the aspects of my subject. I do not intend to deal with hindrances of an economic, financial, or purely material nature. For instance, I am not going to speak about the hindrances to output that arise from over-taxation, the dearth of gold, or the loss of markets due to post-war conditions, or from insufficient consideration of the needs of the foreign buyer, nor about such hindrances as arise from out-of-date machinery, or from inadequate recognition of the value of chemical or physical research. It is the psychological standpoint about which I am going to

speak—the *human* factor, which influences the mind and the body of every class concerned in production.

What is uppermost in the mind of the general public, when we speak of hindrances to output, is the ca'nny of the worker. There is no doubt, of course, as to its existence, but there is a great deal of doubt as to its extent and importance. When it is carried to extremes, there results a remarkable uniformity of output, day after day the output being precisely the same. This condition of things is not natural. Throughout the days of the week a person does not work with a uniform rate of output : in the normal average person there should be some slackening off towards the end of the week, and some improvement towards the middle. The Institute's investigators have found instances where the output day after day is so extraordinarily uniform that one could not doubt some restriction of output. In other cases, instead of the daily work curve improving up to a point and falling off towards the end, and where, for some reason or other (perhaps owing to an irregular supply of material) an insufficient amount of work has been done during that day, an enormous spurt may suddenly occur towards the end of the day in order that the amount shall reach the recognised daily output. This, of course, if of frequent occurrence, is not normal : it should not be in the power of the worker to make huge spurts towards the end of the day, if he has worked well and is feeling tired. In such cases also, it may be suspected that there is some restriction of output.

A similar conclusion may be drawn from observations of individual differences of output. Under

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ordinary conditions of labour these differences should be considerable ; but where a number of different workers are found to be producing very similar amounts of output, regardless of individual efficiency, some restriction of output may reasonably be suspected.

When one comes to analyse the causes of ca'canny by asking the workers how it is that this restriction of output occurs, such reasons as the following are advanced :

- (1) Fear of unemployment.
- (2) Fear of increased short time. (In (1) and (2) enters the factor of self-interest.)
- (3) Fear of injury to or discharge of their less competent fellow-workers. That is to say, if one man works harder there may be less work to go round. Here you have the feeling of class loyalty.
- (4) Fear that if one man works harder and earns more, where workers are paid by piece rates, then piece rates will be lowered.
- (5) General dissatisfaction with present conditions.
- (6) Satisfaction with present earnings.

It may be thought that the last seldom occurs ; but it does occur in certain classes of workers, particularly among young women who earn quite enough as things are, and who do not wish to increase their wages by further output. It is specially frequent in workers of a higher class than usual, who regard their earnings as what is called " pin-money."

Here are a few statements by workers, affording evidence of some of the causes to which I have just drawn your attention.—" We do so much and no more, because if we did more we should have still more short

time." Short time is in itself a hindrance to output. The Institute has published evidence in its *Journal* showing that the greater the amount of short time, the less the hourly rate of output. Another example is : " We can get through more work, but it isn't worth our while." Here the workers were deliberately keeping down production, because the piece rates that had been set in order to limit the workers' earnings to a certain amount per week, had been recently reduced when the employer discovered that the workers could, and did, earn considerably more than the limit which had been set.

Another quotation is : " If I earned more, and if at any future time rates were lowered, I should be blamed by my mates." Another man said : " The limit or standard rate of output is agreed to among ourselves in order to keep the rates up. We just make ourselves comfortable and leave it at that."

In rarer instances, even foremen have insisted upon the limit being obeyed. In one case the foreman said : " You have been putting on the pace a bit. I advise you to go slow." The reasons variously given by the workers for this attitude were the foreman's fear of disturbing the mental atmosphere in the workroom, and his jealousy if the workers earned too large a sum.

These may be regarded by some as extreme cases, but I believe that they are far from unusual. For piece-rate cutting has been much more frequently carried out than is generally supposed. It may be news to some that piece-rate systems are not wholly advantageous in encouraging individual differences in effort and ability.

Akin to this, I should like here to mention the importance of some scientific, psychological training for those who have to set piece rates. Far too often some rates are fair and some are unfair. This want of uniformity among piece rates in different jobs leads the workers to recognise what they call "fat rates" and "lean rates"—money earned easily and money earned with difficulty. The worker comes to fear that improved output will result in re-timing and the conversion of a fat rate into a lean one. Such fears could be safeguarded by more scientific methods of piece-rate setting at the outset.

I remember going into one firm where a "ticket" was daily given out to the workers, the workers being paid by piece rate, and on that ticket was stated the amount of work which each man had to do for the day. When he had done that work, there was nothing else for him to do but to go home. That system had the advantage of securing the attendance of the worker, alike in slack and in rush seasonal variations. On the other hand, it was a distinct hindrance to output. It inculcated in the slack periods bad habits of work; there was plenty of time for the workers, and those who preferred went home at three o'clock, while others spread out the work. It became a distinct hindrance to output when rush periods set in.

Let me instance an example of bad system in piece-rate payments. In the coal mines, when a new seam is opened, the men naturally will go slow because the greater the initial production, the lower the piece rate fixed so as to give a reasonable wage per shift. When the seam becomes harder to work, deficiency allowances

are given to the miner in order to bring his wage up to the required level. After such deficiency allowances have been made, what must happen if working conditions again become easier? Will the miner produce to his full capacity and thus reduce his deficiency allowances, or will he send up just sufficient coal to leave those deficiency allowances unchanged?

I have no intention of discussing here the relative values of different methods of payment; these may well differ according to the character of the work. I remember one instance where the Institute was able to save a wastage amounting to £8 a day in material, the work consisting in the repair of certain worn-out material which could be used again in the work. This saving of wastage resulted from the substitution of time-rate for piece-rate payment of wages.

The effects of the two methods, time rate or piece rate, must differ enormously according to the efficiency of management. One of our investigators reported that where work should have been done in five hours, it was spread over eight hours, the men being paid so much per day.

The "mental atmosphere" of the factory is far more important than the system of payment. The management is responsible for scientific, equitable rate-setting in the piece-rate system; and in the time-rate system it must determine what is a fair rate of work.

I am afraid the result of my experience is to bring hindrances to output more and more home to management, and I am not alone in this conclusion. Some years ago there was published in the U.S.A. a book

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called "Waste in Industry," under the editorship of its recent President, Mr. Hoover, issued by the Federated American Engineering Societies. The book was the result of an inquiry made by about sixty engineers into six principal trades in the country, and they tried to apportion the percentage of waste which should be attributed to management, to the worker, and to external factors arising from such matters as the caprices of fashion, trade relations, etc.

They found the following percentages :

Trade.	Waste percentage attributed to		
	Management.	Worker.	External Factors.
Clothing. . .	75	10	15
Building . . .	65	21	14
Printing . . .	63	28	9
Boot and shoe . .	73	11	16
Metal . . .	81	9	10
Textile . . .	50	10	40

They also found the ratio of inefficiency between the best and the worst firms to be as follows :

Clothing . .	1 : 2	Boot and shoe. .	1 : 3
Building . .	1 : 1½	Metal . .	1 : 4½
Printing . .	1 : 2	Textile . .	1 : 1½

I now want to say a little about the work of the Institute. Now, as always, there is pressing need for cheaper productivity without any diminution of wages. The Institute has been able to cheapen output not only sometimes with increase of wages, but also with increased comfort and contentment of the workers.

The attitude of the Trade Unions to these investigations has been uniformly favourable ; there has been no opposition whatever on the part of the Trade Unions. In fact, on three or four occasions the

workers' organisations have actually asked for investigations of this kind, and they have been declined by the employers. I look forward to the day when Trade Unions will feel that those matters which the Institute is investigating are of such importance that they will even go so far as to call their men off from works where conditions are so bad that inefficiency on the part of the men is unavoidable through inefficiency of management, whether such inefficiency be due to incompetent personnel or to other bad conditions of work.

The question may be asked, "What has been the attitude of the workers to the Institute's studies?" They again have been almost invariably favourable. When the Institute's investigators were working in the coal mines, there were several instances where the men suggested other pieces of work which the Institute could beneficially carry out.

The first piece of work carried out by the Institute was on packing; it resulted in an increase of output of 35 per cent. Of their own accord the workers came and expressed their thanks to the investigators, because they were going home after their day's work feeling much less tired than before.

Other work carried out by the Institute on breakages for two firms resulted in a reduction by 53 and 44 per cent. respectively. This led to similar expressions of approval on the part of the workers, one of them remarking, "We are in clover now." It was striking how much more smoothly, and with what freedom from worry and annoyance, the whole flow of work now went, thus being performed with increased efficiency.

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Why has the work of the Institute proved so welcome to the worker? The answer, I think, is because of its cardinal guiding principle—not to “speed up.” Ease of work has been regarded by the Institute as more important than speed of work. Speed of work has been left to follow of its own accord. For as soon as the investigators discover the obstacles, mental or physical, which prevent the worker from giving of his best, and as soon as these obstacles are overcome, greater speed of work follows.

The Institute has adopted quite a new attitude with regard to time study. The early American methods, where, for example, Taylor bribed the best workers to be the subjects of time study, and based his piece-rates on the effect of such time study, are unsuitable in this country. Time study and movement study were carried out by engineers who looked at the matter from the purely mechanical standpoint, and had no psychological training. I know two cases where time study was introduced here on such lines. In one case a strike occurred, and in the other great unrest arose throughout the factory.

On one occasion I was addressing a meeting of managers, when the efficiency engineer complained that he carried out time study but “could not get the goods across.” Successful time study cannot be carried out for the express purpose of directly speeding up the worker. Time study has its value for effecting a just piece-rate setting; it has its value in regard to movement study in order to try to find out what are the best movements and in order to eliminate wasteful movements on the part of the worker. It has its value

in training the worker and in determining waste of productive time.

In movement study there is an enormous amount to be done in the way of abolishing needless effort and needless movements. Those of you who are familiar with Farmer's work for the Industrial Health Research Board on sweet dipping, will remember that by training workers in improved methods he obtained a 27 per cent. increase of output. These workers found the work so much easier that one or two decided that they had better not use the new methods, in case the foremen should think they were not working so hard. On going into two rooms in this factory, in only one of which the new methods were being used, it could be seen at once that those using the old methods were working the harder with a larger number of unnecessary movements. Yet they were not accomplishing as much as those workers using the new methods.

In coal-mining the Institute obtained an increased output of 16 per cent. In polishing, Farmer was able to reduce the time spent in polishing a certain number of forks from forty-four minutes to thirty minutes. These were *experienced* workers whom he was training in order to eliminate needless movements and to improve other movements that they were carrying out. Nevertheless this remarkable reduction in time was obtained.

Again time study is extremely valuable, because if it is known what are the several times in which different movements should be performed, and if an operative is found to be taking a time longer than usual, the investigator can at once identify the particular

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movement that is wrong. Applying this use of time study to packing, an increased output of 21 per cent. was obtained from a group of workers trained by improved methods, as compared with another group trained according to the methods previously in vogue in the factory.

Time study is of the greatest use in regard to the waste of time in productive labour. A great deal can be done in this way to the satisfaction of the worker. There is much waste of time in industry which irritates the worker, or leaves him in a state of inertia. It is a great mistake to believe—as the public generally believes—that the average worker likes wasting time. There are black sheep in every flock, but on the whole waste of time is felt as a great deterrent to output throughout the working world.

I come now to the work of the Institute on vocational guidance and selection—trying to find the best job for a given man, and the best man for a given job. It is difficult to exaggerate the importance of this work in removing hindrances to output. Take the case of monotonous work—there are people who can take an interest in a given job that appears monotonous to others. A great deal of unrest arises from what I may roughly call “nerviness,” and a great deal of that “nerviness” is due to a man being engaged on a job which he is not suited to perform.

The question of monotony and of getting suitable people to undertake monotonous work, brings me to the problem of how to avoid monotony. Both the Institute and the Industrial Health Research Board have been able to arrange changes of work and to

achieve considerable increases in output by this method. Other people who have tried changes of work have found that there is much initial opposition to it, but such changes often require time to show their full effect. This is, likewise, the case in regard to changes in hours of work. When, for example, a rest pause is introduced, it may be weeks, or even months, before the full effect is seen as an improvement in output.

The work of the Institute has also been directed to the improvement of machinery and implements. You can have no idea how little attention has been paid by engineers to the human factor in designing machinery. The worker may be placed with a treadle in an inefficient position, or with levers placing the worker at great disadvantage; for the greater part of the day he may be forced to maintain a cramped position, or to use needless effort. If this is so in regard to machinery, it is still more so in regard to benches and seating accommodation of the "manual" worker.

A great deal can be done in removing hindrances to output, such as result from an unsuitable height of bench or table, defective supply of tools, unnecessary stooping, insufficient knee and elbow room, and in improving the arrangement of material, in regard to tables, holders, desks, etc. By this means the Institute has obtained such percentages of improvement as 10, 11, 12, 14, 16, 17, 18, 22, 23, 30, 31, 32, 36, 40, and even 43 in different occupations.

Lastly, there are the improvements that can be made in physical environment—*e.g.*, in temperature, in

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protection of the worker from needless escape of heat, or from stuffy atmospheres. In one case 50 per cent. of the gas bill has been saved. Bad ventilation, dust, humidity, poverty of illumination are distinct hindrances to output, and this has been proved over and over again both by the Industrial Health Research Board and by the Institute.

Here, again, we are brought back to management. All these points are fundamentally matters for improved management.

I now come to a more difficult point—the attitude of managers and foremen towards our investigators. This attitude has not been quite so uniformly satisfactory as that of the Trade Unions and workers. Perhaps I had best exemplify the matter by an exceptionally bad case on which I once received a report. It refers to the manager of the department in which the investigator was working, and runs as follows: "This worthy gentleman, believing that his organisation is perfect, and jealous of his reputation, makes it his business to wither every suggestion X (the Institute's investigator) makes to him, and so prevents any criticism or suggested improvement from reaching the central authority. The place seems dead, and the out-of-date management are filled with self-satisfaction, not realising that they are obsolete. They treat the investigation merely as the fad of an influential director who unfortunately has to be humoured."

I have given this as an extreme instance, but I feel sure that a great and frequent hindrance to more efficient output lies in the class of management engaged. There is urgent need for a better class of

foreman and departmental manager ; and this need is becoming widely recognised.

I remember talking to a coal-mine manager, who was contrasting the type of foreman that existed in his young days in the coal mines with the one needed at the present time. In his youth, he said, the foreman who succeeded best was the man who swore the hardest and could knock a man down in the shortest space of time. But those days, as he rightly said, have quite gone. The men are far more cultured, they drink relatively little, and they require a very different type of foreman from the past.

One difficulty is the unwillingness of workers to assume responsibility at the present day. Part of that may be due to a feeling that they are going to isolate themselves from their fellow-workers and to occupy a different social grade, involving ostracism from people with whom they would much rather work on the same level. But I am certain that a great deal could be done by better selection of foremen, by earlier training and education, and especially by a closer relation between the foreman and the higher grades of management. The foreman, of course, is always in a difficult position. He is too often needlessly isolated from, and not taken sufficiently into the confidence of, higher management ; and, generally speaking, his pay is not sufficiently different from that of the worker in relation to his responsibilities.

There is one thing that is very striking to one who has had experience in factories, and that is how the cue is taken from above. In my hospital work in France, I remember, I could fairly guess on visiting a

hospital what its commanding officer was like, by the time I had seen the lance-corporal at the gate, or at all events the sergeant. A uniform "atmosphere" runs right away through, from above downwards. The same thing happens in the factory. Whatever the attitude of the foreman may be, that is reflected in the men themselves ; and the same thing holds still further. Whatever attitude the General Manager or the Managing Director may take, that is reflected in the departmental managers and foremen.

In the army men are found to be devoted to their regimental officers, whether the latter are of what William James called the "tender-minded type" or of the "tough-minded type." The type of officer is of small consequence, so long as he is just, and "plays the game." The officer acquires prestige ; and of the right kind of officer there is no trace of that envy which is too common in industry between the men and their superiors. The good officer is not envied by his men for his better uniform, better quarters, or for the horse that he rides. Pride is felt in the officer, and the same pride occurs in the best firms.

Another factor I should like to mention in regard to hindrances to output is the relation between the younger and older directorate. I have seen cases where the young director's car is at the door at three o'clock, and he goes off then to golf. Knowledge of this spreads and is reflected disastrously through the factory. On the other hand, some of the older directors who are feeble in health, have to go away to the South of France or to Egypt in the winter, and feel they are justified in doing so because they have "done their

bit." But they leave the younger generation hampered, as important matters may have to await the approval of the senior director, who is abroad. In such cases, senior directors are hard to meet and hard to persuade.

Each side is thus hindering cheaper output and each is blaming the other for selfishness and inefficiency. Remedies of a material or technical nature I have already indicated, but there are certain moral remedies which seem to be more fundamental. If only one side could appreciate the standpoint of the other, if only—

" Oh ! wad some power the giftie gie us
To see oursels as others see us ! "

and if only each could remember—

" Do unto others as you would others do unto you,"

we might get rid of the two primary emotions—of fear which leads to suspicion, and of anger which leads to resentment between management and labour.

It is also necessary to stimulate knowledge and responsibility, both of which will improve the sense of social service. If, as I suppose, there is often a feeling of social service among policemen and postmen, who realise that they are doing something for their country's good, it is difficult to see why something of the same feeling should not be encouraged and developed in the ordinary worker. It implies a man's knowledge of the value of the work he is doing, and it implies some voice in some aspect of the management of his industry.

On these grounds I cannot but conclude that the greatest modern hindrance to efficient output really lies in those defects of organisation which are of a psychological character.

CHAPTER XI

THE TASTE-NAMES OF PRIMITIVE PEOPLES

I

THE study of the words given by primitive people to describe their sensations has hitherto been confined for the most part to a single field, the colour-sense. But *the results warrant an extension of such inquiries to other senses.* The colour-vocabularies, collected from various regions, show instances where a single word does duty for two or more colour-sensations, *e.g.*, for black and blue or for blue and green ; where brown receives no definite name ; and even an instance where there is apparently but one specific colour-name, a word for red. A similar lack of differentiation exists, as we shall see, in primitive taste-vocabularies.

One is naturally prone to conclude that such features of confused nomenclature imply corresponding limitations in the degree of sensory acuity or discriminability. Yet, even if it be certain that dark-skinned people are relatively less sensitive to the violet, and more sensitive to the red end of the spectrum than are more advanced communities, this difference is probably insufficient to account for the surprisingly common

absence of a specific word for blue in primitive colour-vocabularies.¹ Moreover, there are unquestionably other factors at work in determining the differentiation of the names of sensations. In the first place, it is quite conceivable that a sensation may not be of sufficient value or interest to receive a special name, although it is capable, nevertheless, of being fully experienced and discriminated. Were we, for example, to ask of a civilised community what objects they would describe by the words grey or bitter, the variety and incongruousness of their replies would be generally surprising. Yet such confusion is clearly not the expression of deficient sensitivity or discriminability; these people could easily learn the exact difference in meaning between the words grey and buff or between the words bitter and acid. And in the second place, even when a lack of *discrimination* is found, the absence of *discriminability* is not necessarily implied. Certain instances of confused nomenclature may be simply due to insufficient pains having been taken to analyse sensory experiences. The ability to differentiate may exist potentially, and may, if occasion later arise, be carried into actual effect; just as any one of us can be taught by practice to resolve an impure tone into its constituent fundamental and higher partial tones.

But the attempt to explain the imperfections of

¹ For a full discussion of primitive colour-vision see the following papers by W. H. R. Rivers: "Reports of the Cambridge Anthropological Expedition to Torres Straits," vol. ii., Part 1, Cambridge, 1901, pp. 48-96; *Popular Science Monthly*, vol. lix., 1901, pp. 44-58; *Journ. Anthropol. Inst.*, vol. xxxi., 1901, pp. 229-245.

primitive sense-vocabularies will be seen to involve a discussion of the play of psychological facts in the process of sensation generally; and into this obscure subject I cannot enter now. All that I would do here is to draw attention to a certain, though imperfect, correspondence of the features of taste- and of colour-nomenclature in primitive languages, and to the consequent possibility that their true explanation will be ultimately found to have a psychological rather than a merely physiological basis.

My attention came to be drawn to the taste-vocabularies of primitive peoples in the course of a few experiments which I made during my visit to the islands of the Torres Straits. Dr. Seligman and I tested the islanders with dilute solutions of sugar, salt, acid and quinine, and thereby obtained their equivalent words or expressions for sweet, salt, sour and bitter. The most interesting results of this inquiry can be thus summarised¹:

(1) The literal meaning of the phrase commonly used in the Torres Straits to denote sweetness is "tasting good."

(2) The same phrase is applicable to denote saltiness.

(3) The usual word for saltiness is derived from seawater.

(4) The taste-names for salt and sour tend to be confused.

(5) There is no specific name for the bitter taste.

¹ For a fuller account see the "Reports of the Cambridge Anthropological Expedition to Torres Straits," vol. ii., Part 2, Cambridge, 1903, pp. 186-188.

II

Now if we examine the taste-names of Indo-Germanic languages, we shall find precisely these features repeated there.¹

(1) The original meaning of the Sanskrit $\sqrt{\text{svad}}$, to which the Greek ἡδύς, the Latin *suādeo*, and the English *sweet* are allied, was "tasting pleasantly." Apparently only later did the word acquire the narrower gustatory sense of sweetness; primarily it meant "savoury" or "tasty."

(2) Thus it might with equal appropriateness have been applied to salt and to sweet flavours, salt having been almost universally prized by primitive people, and its taste enjoyed by them with relish. Indeed the Lithuanian word *saldūs* (cf. the Latin *sal*) thus acquired the meaning of spiciness and was thence applied finally to sweet flavours. Probably the old Slavonic *sladŭkŭ* and the modern Russian *sládkij*, which likewise mean sweet, had a corresponding origin. The Sanskrit *lavāṇa* = salt, similarly came to be applied to lustre, grace and beauty; the same usage occurs also in Arabic, Persian and other languages.

(3) Our own taste-word salt, of course, is derived as in the Torres Straits from the tasted substance, the sea; and words with similar derivation prevail throughout Europe. Sweet is probably our only taste-word that had from its very origin a gustatory meaning; indeed the Indo-Germanic *svādus* (=sweet) is possibly related to *su* (= good) and *ed* (= to eat).²

¹ To facilitate comparison, the figures prefixed to the last paragraph correspond to those in the two subsequent sections.

² This conjecture I owe to Mr. (now Prof.) H. M. Chadwick, of Clare College, Cambridge.

Many European taste-names have been either borrowed or evolved from names which owe their origin to our other senses. Thus the Latin *acidus* is derived from *aceo*, the Sanskrit *tikta* from *tij* (both of which mean to sharpen), our own *bitter* from the Anglo-Saxon *bītan* = to bite, and *tart* perhaps from the Anglo-Saxon *teran* = to tear.¹ As for the derivation of *dulcis* and γλυκύς and the relation of ἄμρος, *amārus*, and the Sanskrit *amla* to each other and to the Semitic equivalents for bitter, they are too uncertain for inclusion here.

(4) The terms salt and sour are often confused in Europe. The peasants of Marchfeld, writes Mach,² describe salt as *sauer*, "because the word *salzig* is not familiar to them." The Lithuanian word for salt is *sūras* (cf. Anglo-Saxon *sūr* = sour). Kiesow,³ in the course of his experiments upon children, found that almost without exception sour was called salt, and that a few persistently called bitter salt, until "their judgments were corrected by repeated practice."

(5) I made a few experiments in a small village of Aberdeenshire, where even among the adults I met with precisely the same inability to give a distinctive taste-name to the dilute solution of quinine as I had found in the Torres Straits: they would call it a "sort of acid" or a "sort of salt" taste. To some extent, doubtless, this confusion of bitter with sour and salt is attributable to the similar tactile impressions which

¹ W. W. Skeat, "Principles of English Etymology," First Series, Oxford, 1892.

² "Contributions to the Analysis of the Sensations" (Eng. trans.), Chicago, 1897, p. 42, footnote.

³ "Philosophische Studien," Leipzig, 1894, Bd. x., S. 343, 344.

tend to accompany all three taste-sensations, varying according to the taste and its intensity from mere astringency to acidity, burning, and even pain. But apart from this, it is quite certain that most people have a *very vague idea of the sensation to which the word bitter should be restricted*. In bygone days the word was applied in England to pungent, biting and saline tastes,¹ and we still speak loosely of the "bitter brine" and the "Bitter Lakes." In Latin, the word *amārus* was similarly used. In Greek *πικρός* was applied to sea-water, unripe fruit and to pungent flavours, while in Sanskrit the corresponding *tikta* is found used to describe the taste of a gourd, of mustard and other burning tastes.

III

The inquiry, thus begun, was extended to other primitive peoples by means of a *questionnaire*, which I addressed to officials, missionaries and Europeans resident abroad. The trouble taken by these unknown friends to secure for me reliable information has in many cases been surprisingly great. Very often they expressly tested the natives with dilute solutions of tasting substances in the manner which I had prescribed. *My hearty thanks are due to them for the kind feelings that led them to interrupt the routine of their (often busy) lives in order to furnish me with the material I desired.*

It is hardly necessary to point out the errors to which one is liable in an inquiry of this kind. Throughout I have used my discretion in selecting the most trust-

worthy returns.¹ As a rule, it was easy to gauge from the general character of the written reply how much care or knowledge had been brought to bear in answering the *questionnaire*. Perhaps the best evidence of reliability is furnished by the general broad agreement of the replies from very diverse parts of the world.

The questions which I asked were the following :—

“ I. By what word or words in their own language would natives describe the taste of solutions (1) of sugar, (2) of salt, (3) of *weak* acid, (4) of quinine (*i.e.*, the tastes we call sweet, salt, sour, bitter) ? [The value of the results will be much enhanced if opportunity allow of specially conducted experiments by applying the above solutions to the tongue of even a single native. Specially mention if the given information is based on such experiments.] Possibly the same word is given to two tastes.”

“ III. Give, if possible, the exact meaning of the words in I. [For instance, are the taste-words borrowed from the tasted substances (as in our English ‘ salt ’) ? Had they the original meaning of softness, sharpness, etc., or have they given rise to such meanings secondarily ? Or do they mean merely pleasant and unpleasant ?]”

(Questions II., IV., and V. were not concerned with the subject now at issue.)

(1) In Uganda ² there are two taste-words, *kuwoma* and *kawa*, the former being applied to sweet, salt and

¹ In a few instances, by the advice of Mr. S. H. Ray, who has kindly read through my manuscript, I have made slight alterations in spelling. I have, I hope, acknowledged all the various sources of my information in the footnotes. But in order to save burdening these pages with excessive detail and unnecessary repetition, I have omitted many otherwise valuable returns, especially those which reached me after the manuscript had gone to press. I am indebted to (the late) Professors Bendall and E. C. Quiggin, of Gonville and Caius College, and to Mr. (now Prof.) E. H. Minns, of Pembroke College, Cambridge, for help in the languages with which they are specially familiar.

² Rev. J. Roscoe.

other agreeable flavours, and the latter to unpleasant flavours. Thus, *kuwoma* is used for the taste of sugar and for that of certain sour fruits liked by the Baganda. In Aulua Malekula, in the New Hebrides,¹ a similarly primitive taste-vocabulary is found: the words *garakhar* and *kokon* are respectively used for pleasant and unpleasant tastes.

(2) The use of a common word, applicable both to sweet and salt tastes, has been already alluded to. It occurs also (α) among the Golo folk of the central Sudan,² (β) in the Akan dialect of Ashanti,³ (γ) in three dialects spoken south of Lake Victoria Nyanza,⁴ (δ) in Dakota,⁵ (ϵ) in the Bugotu dialect of Isabel Island,⁶ (ζ) in Yoruba,⁷ and (η) in Swahili⁸; the respective words, each of which was used by the natives to describe both sweet and salt tastes, being (α) *don-du-teh*, (β) *de*, (γ) *kunona*, *kunulila*, *kujomelela*, (δ) *skuya*, (ϵ) *mami*, (ζ) *dun*, and (η) *tamu*.

(3) The taste-word for salt, where it exists, is commonly derived from sea-water. Often a foreign word, having this origin, has been introduced, as in New Britain, the Loyalty Islands, Samoa, etc. Salt is not mentioned in the Rig Veda. In Hindi⁹ *khari* (= salt) is derived from *khar*, a dry grass which is burnt to produce the substance. Salt is similarly made

¹ Rev. T. Watt Leggatt.

² Colonel S. L. Cummins, A.M.S.

³ Anonymous correspondent.

⁴ Rev. F. H. Wright.

⁵ Stephen R. Riggs, "Grammar and Dictionary of the Dakota Language," Smithsonian Institute, Washington, 1852.

⁶ Rev. H. Welchman.

⁷ Rev. J. Harding.

⁸ Rev. A. Crabtree.

⁹ Captain A. Mudge.

in Uganda, but their (Lusoga) word *muka* (= salt taste) has not an obvious derivation. In many tongues, e.g., in the Nyoro dialect of the Toro people, East Africa,¹ there appears to be no word for the salt taste: they say *okunulira* = it has a pronounced flavour. Soo, too, the Ainu phrase² returned for sweet is *hera an* = there is flavour; and the Malay *manis* probably has a similar meaning, as it is often coupled with the word *banya* (= very), even when only a slight degree of sweetness is implied. Likewise, the Persian word for sweet is *tatli*, derived from *tat* = taste.

But the Persians also use *shirin* for sweet, derived from *shir* = milk. A sickly sweet taste is called *pritornyj* by the Russians, who also employ it to denote insipid and fatty tastes. The Toaripi (British New Guinea) word for sweet likewise means fat. *Kami-kamidha*, the equivalent for sweet in the Bau dialect of Fiji,³ is applied to tender pork and to succulent food generally. Such an association of sweet and fatty tastes is not easy to explain.⁴ It may conceivably have arisen from the soft smoothness of very weak or from the syrupy nature of very concentrated sweet solutions; but a truly fatty taste accompanies bitter fluids rather than the sweet.⁵ Probably our

¹ Mrs. Fisher.

² Anonymous correspondent.

³ Dr. Glanvill Corney, Mr. H. Monckton and Captain W. W. Wilson.

⁴ It is a curious coincidence that Aristotle ("De Anima," lib. ii., cap. 10, §5) expressly places the fatty or oily taste near to the sweet.

⁵ F. Kiesow, *op. cit.*, S. 525. Oehrwall, *Skandin. Arch. für Physiol.*, 1894, Bd. ii., S. 9.

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word "luscious" is a guide to the fitness of these words.

A further difficulty comes from the north-east of British New Guinea. The Binandele people ¹ rendered sweet by *be damo-damo*, which means "cooling the mouth." From an independent source ² I obtained a corresponding word from the Bou people, who live in the mountains near the Wamira district of the same island; their expression for sweet is *wainuau baubana*, which means "cooling the heart."

It is natural to find sweetness associated with honey. But there is little evidence to show that honey gives the name to its taste as sea-water so commonly does. On one occasion a Mabuiag islander of the Torres Straits ³ called the sweet solution *wam mitalnga* = thing tasting of honey; but his generic word for sweet is *kapu mitalnga* = thing tasting good. The word returned from the Endeavour River district, Queensland (Koko-Yimidir dialect ⁴), is *murla* = honey or bee. The Awalama folk near Wamira, British New Guinea, ⁵ called the sweet solution *wigougauna* = like honey. The Hindi and Punjabi *mitha* ⁶ = sweet or pleasant to the taste, is allied to the Sanskrit *madhura* (cf. *madhu* = honey, ? *mad* = to delight, ⁶ and our English *mead*).

Our word *sour* may have a twofold connection. It

¹ Rev. Copland King.

² Rev. E. L. Giblyn.

³ Professor C. G. Seligman.

⁴ Rev. G. H. Schwarz and Dr. W. E. Roth.

⁵ Captain A. Mudge.

⁶ Cf. A. Fick, "Indogermanisches Wörterbuch," Göttingen, 1890, Th. 1., S. 105.

is probably allied to the sour-tasting sorrel, and by some it has been related to ξυρός ($\sqrt{\xi v}$ = to scratch). Analogous connections are commonly met with in other languages. Thus, the Sanskrit *amla* = sour is used for sorrel and is possibly related to *ampfer*, the German word for this plant. So also the Hindi ¹ *chuk* (= sour) is used for the French sorrel (*Rumex montanus*), the Punjabi ¹ *khata* may be connected with *khat*, a very sour plant, and the Fijian ² *wiwina* with the fruit *wi*, the Brazilian plum, which is very sour when unripe. Less frequently the word for sour is derived from "turned" milk. Corresponding to the just-mentioned relation of sour to $\sqrt{\xi v}$, we have in Malay ³ *gigi nilu* = the teeth stand on end; in the Wamira district of N.E. British New Guinea ⁴ ⁵ *i vigora* = it bites; in Taupota of this region ⁴ *i vivo turu-turaa* = it kills the teeth; in Mukaua, also of this region, ⁵ *i i nao bai raumite-mitena* = it causes the face to be wrinkled; in Mota, Banks' I., *gogona* from *gona* = tied up in a knot.⁶ The Nyoro ⁷ word for sour is *enturo* = spittie-creating, and the Malagasy

¹ Captain A. Mudge.

² Dr. Glanvill Corney, Mr. H. Monckton and Captain W. W. Wilson.

³ Mr. H. N. Ridley.

⁴ Rev. Copland King.

⁵ Rev. E. L. Giblin.

⁶ It is naturally impossible to say how far these and other returns represent the generic taste-words in ordinary use and how far they were invented on the spur of the moment by the subject under investigation. Several of them, however, were corroborated independently by other natives, although others may have been specially employed for the occasion, as Dr. Rivers found to be sometimes the case in the colour-nomenclature of Torres Straits (*op. cit.*, p. 61).

⁷ Mrs. Fisher.

word¹ is *mahari-kivy*, with precisely the same meaning.

(4) Confusion between salt and sour, and more especially between salt and bitter taste-names, is frequently met with. In New Guinea,² in the New Hebrides,³ and throughout a great part of Polynesia, a common word is used to denote salt, sour, and bitter tastes. The Arabic *hamid* is applied to salt and bitter as well as to sour tastes. The Somali *danan* is applied to lemons and to salted meat. All these words doubtless mean rough, unpleasant or biting.

(5) In Aulua Malekula, New Hebrides,⁴ in the Suto language of the North Transvaal, in Uganda,⁵ in the Bugotu dialect of Isabel Isl.,⁶ and in Toaripi, British New Guinea,⁷ the respective words *kokon*, *ba-ba*, *kawa*, *aha* and *eakere* equally express either sourness or bitterness. A notion of distaste, astringency or pain underlies all these words. The Russian *gor'kij* = bitter, with which perhaps *gorêt* = to burn is connected, properly means pungent; so also the Sanskrit *katuka*, which is probably connected with $\sqrt{\text{krit}}$ = to cut (cf. Lithuanian *kartùs* = bitter). The Mukaua folk² called the bitter solution *i i kawasiqariqari* = it irritates the mouth; those of Bou,² also in British New Guinea, called it *waipolana* = burning; those of Awalama,² of the same district, *witururuana* =

¹ Rev. J. Richardson, "A New Malagasy-English Dictionary," Antananarivo, 1885.

² Rev. E. L. Giblin.

³ Rev. W. Watt.

⁴ Rev. T. Watt Leggatt.

⁵ Mr. P. C. Jonas.

⁶ Rev. A. North Wood.

⁷ Rev. H. Cole.

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causing numbness.¹ The taste-name for bitter among the Suto folk of the N. Transvaal² is *ba-ba* = astringent; among the Kaguru of Central Africa,³ it is *usungu* = painful; among the Gogo folk⁴ *kali* = fierce; and in Fiji⁵ *mbaku* = astringent, or *nga-nga* = pungent. In several languages it is also used to mean "poisonous."

IV

The features with which we thus meet in taste-vocabularies are to some extent represented in vocabularies pertaining to other senses. Just as sour and bitter or sweet and salt are often described by a common name, so the words for blue and black are usually found undifferentiated in primitive languages. The derivation of the word for saltiness (and sometimes of that for sourness) from the tasting substances is paralleled by the fact that most colour-names have been borrowed from the names of the coloured objects. Again, as in taste, so in hearing recourse was had to words expressing tactual or muscular sensations, when tones were classed according to their pitch, as *acutum* or *grave*, or as *ὀξύ* or *βαρύ*.

To primitive man, of course, brown and grey were presentations as unique as blue or red, differences of *timbre* seemed as elementary as differences of pitch, and astringency, oiliness and alkalinity were gustatory sensations as simple and pure as sweetness and bitter-

¹ See note ¹, p. 172.

² Mr. P. C. Jonas.

³ Rev. A. North Wood.

⁴ Rev. H. Cole.

⁵ Dr. Glanvill Corney, Mr. H. Monckton and Captain W. W. Wilson.

ness.¹ But in respect of later analysis taste has always laboured under special disadvantages, compared with the other four senses. The frequent association of sensations of taste with those of olfactory origin and their intimate fusion with disturbances of tactual or common sensibility have always made investigations very difficult. In few senses as in taste do we find such feeble powers of subjective analysis, or such a close relation with general emotional tone. Long ago it was written of tastes—τοῖς πάθεσι καὶ ταῖς ἡδοναῖς διαφέρουσι.² And the most primitive taste-vocabularies, as we have seen, are based upon mere changes in affective tone. Substances are primarily classed according as they are tasteful or distasteful; the

¹ The following taste-vocabularies are of interest in this connection :—

(α) *Sanskrit* : sweet, salt, sour, bitter, pungent and astringent. Six tastes were so universally recognised in ancient India that the tastes became the chronogram for the number six. In the *Suśruta* the *gustus aquarius* is described as being composed of six tastes, of which sweet, salt and acid are pleasing and heavy, bitter, pungent and astringent are rough and light.

(β) *Newāri*, a Tibeto-Burman language of Nepal, from the fourteenth century onwards : sweet, salt, sour, bitter, astringent and savoury. (Cf. Conrady, *Ztsch. d. deutsch. morgenländ. Gesell.*, Leipzig, 1893, Bd. xlvii., S. 558.)

(γ) *Greek* : sweet, salt, sour, bitter, astringent, dry, pungent, vinous and fatty (or oily). (Aristotle, "De Anima," lib. ii., cap. 10, § 5; Theophrasti Eresii, "Fragmenta, De sensu et sensibilibus"; Plutarch, "Questiones naturales," v.)

(δ) *Mediæval Italian* : sweet, salt, sour, bitter, astringent, dry, fatty, insipid and acrid. (Joanne Bravo, "De saporum et odorum differentiis," Venetiæ, 1592.)

(ε) By *Luchtmans*, eighteenth century : sweet, salt, sour, bitter, astringent, vinous, alkaline, unctuous, insipid and acrid.

(ζ) By *Linnaeus* : sweet, salt, sour, bitter, dry, aqueous, mucous, fatty, styptic and acrid. (The last three classifications are cited from W. Horn, "Ueber d. Geschmacksinn d. Menschen," Heidelberg, 1825.)

² Theophrastus, *loc. cit.*

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differences, for example, between sour and bitter are considered less striking than their common impalatability.

It seems likely that the intimate connections between sensations of taste, touch and emotional tone, to which the vocabularies of primitive peoples thus bear witness, date back to a very early period of phylogenesis. For in the skin of fish occur beaker-shaped organs, which have the same structure as that of mammalian taste-buds and are continuous with similar end-organs within the mouth. And in children it has been shown that gustatory sensibility is spread throughout the mouth and pharynx far more widely than in adult life.¹

¹ Kiesow, *loc. cit.*, S. 345-348.

CHAPTER XII

THE BEGINNINGS OF MUSIC

I

SOME years ago I had the opportunity of studying the music of three primitive peoples, differing widely in race and culture, (i.) the Torres Straits Islanders, who appear to be mainly Papuan but may have been affected by Australian, Melanesian and even Polynesian influences, (ii.) the Veddás, who have been termed "proto-Dravidian" aborigines of Ceylon, and (iii.) the Kenyah, Kayan and Klemantan peoples of Sarawak in Borneo, where Mongolian, Malayan, and possibly Indian and other influences have been at work. The music of these three peoples forms the main basis of this paper.

The Malu music of Murray Island (situated in the eastern part of the Torres Straits) affords perhaps the most interesting examples of very primitive music which have yet come to light. Among the Murray Islanders it is easy to recognise three classes of music, each with a style distinctly its own : (a) modern secular tunes, sung usually to foreign words in the language of the western islands of the Torres Straits, and in great part introduced from these islands to Murray Island ; (b) older tunes, belonging to the now obsolete *Keber* ceremonies, also introduced from the western

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islands and sung to words in that tongue ; and (c) the music of the still older ¹ Malu ceremonies. This Malu music was sung to words of the Murray Island language ; but the words are now so old that they are archaic, and their meaning is in many cases lost and irrecoverable.

As I have stated, the Malu music is quite different in character from either of the other two classes of more recent Murray Island music which I have named. There can be little doubt that it belonged to

Malu Song No. IV³



an earlier and very different culture. During my stay in the Island I was able to collect five different tunes belonging to the Malu ceremonies, but only after the greatest difficulty. The Malu rites related mainly to the initiation of boys and to the funeral ceremonies of those admitted to the cult. The tunes were so sacred that no woman or child might hear them and live ; even at the time of my visit, ill-luck was feared from the singing of them.²

The first of these songs to which I will call attention

¹ Older, that is to say, from the standpoint of their appearance in Murray Island.

² Cf. "Reports of Cambridge Anthropological Expedition to Torres Straits," vol. iv.

is Song IV. of my collection. It consists of a series of descents through approximately whole-tunes varying from 160 to 220 cents,¹ the number and (within the limits just mentioned) the size of the steps appearing to be entirely at the discretion of the singer. Ultimately so low a note is reached that the singer stops. Here we seem to have a song founded merely on the addition of step to step in descent, the size of the steps being intended, perhaps, to be equal.

Another of these Malu songs, No. III., consists of

Malu Song No. III¹.



only two intervals, one of 190 cents ascending from the initial note, and the other of about 160 cents descending from the initial note, followed by a markedly *portamento* descent to a note approximately an octave below the initial note.

From a consideration of these two songs, it would appear that the Malu music is founded on a number of descending intervals, each approximately of a whole tone, and that the importance of the pitch of the initial note and its close relation to its lower octave become early recognised.

¹ A cent is the hundredth part of our tempered semitone; hence one twelve-hundredth part of the octave.

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The further development from this stage is well seen in Song II. of the Malu songs. This song consists of an introductory recitative followed by a fairly rhythmic descent through a series of five intervals, each of which is somewhat larger than a whole-tone. The descent extends approximately through an octave, after which the verse is again repeated at (nearly) the original pitch. The octave rise may occur either in the course

Malu Song No. II.



or at the end of the verse—indeed, probably whenever the pitch has become uncomfortably low for the singer. At different times and from different singers I obtained three records of this song, two containing two verses each, and one containing four verses. Of these eight verses six consist of the just-mentioned descent, by five approximately equal intervals, through an octave. Clearly, the initial note served as a kind of keynote to the singer, which he reached again at the end, and with which he began each new verse. He had therefore to keep carefully before him the pitch of the initial note. In point of fact he generally tended to sharpen this note in memory. Thus one verse

begins on G and ends on A ; the next begins on A and ends on A ; another verse begins on D and ends on E. The octave rises, however, which occur in the middle or at the end of a verse, are almost exactly in tune. In this song we see the development of an air based on five successive, roughly equal, descents, the pitch of the initial note being steadfastly kept in mind to serve as the final note of that verse and as the initial note of the next.¹

Two verses, each in a different record, show deviations from the above plan, which are of considerable musical interest. In one the singer adds a sixth step in descent, bringing him (without any octave rise) to a note nearly a minor tenth below the initial note. Nevertheless, he appears to have borne the pitch of the latter in mind ; for, realising that he has descended too low, he at once reaches the first note of the next verse by a rise through the interval of a tenth. The other anomalous verse contains *two* rises through a *fifth* instead of the usual rise through an *octave* : one of these rises occurring in the middle, the other at the end of the verse. In contrast to the octave rises these fifths were very impurely sung, containing 654 and 626 (instead of 702) cents respectively. This natural tendency for a primitive musician to substitute fifths for octaves is of special musical interest, seeing that among ourselves the fifth is recognised to be the next most "consonant" interval after the octave, and that confusion is more apt to occur between

¹ I have one record of a closely similar song in which, however, six instead of five steps are used in descent to the lower octave (cf. "Reports of the Cambridge Anthropological Expedition to Torres Straits," vol. iv., pp. 244, 247).

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octaves and fifths than between octaves and any other intervals.

In another of the Malu songs (No. IV.A), instead of octave descents by a series of small intervals, we find a series of direct fifth descents which alternate with ascents through fourths, the notes being reached always

Malu Song No. IV A.

$\text{♩} = 60$

Shouts of *bua, bua, bua*.....

by a characteristic *portamento*. By such descents of a fifth and rises of a fourth (averaging 761 and 534 cents respectively), the pitch falls in a series of approximately whole-tones until the singer has finished the words of his song. In this song the initial note appears to be of no importance, but it is probable that the height of each ascent is partly determined by the memory of the pitch of the previous high note and by the intention to ascend about a whole-tone lower than this note. At

the same time it is perfectly obvious that the fifths and fourths have arisen independently, not as the sum, of the smaller "whole-tone" intervals. The rudiment of "form" which we noted in the last song is here still further developed; an opening phrase, based on a descending fourth, is clearly differentiated from the rest.

We may thus sum up the main characteristics of the Malu songs :—

(a) The use of a succession of (approximately) whole-tone descents.

(b) The memory of the initial note, permitting a return thereto at the start of successive verses.

(c) The use of accurately attuned octave rises, for which (approximate) fifth rises may be occasionally substituted.

(d) The use of (approximate) octave and fifth descents and fourth ascents, almost invariably *portamento*.

(e) The origin of these larger intervals independently of the smaller "whole-tone" intervals.

(f) The absence of thirds, sixths, sevenths, or other intervals.

(g) The commencing employment of musical phrases and their repetition at different levels of pitch.

Turning now to the Veddas of Ceylon,¹ we find it possible to divide their songs into three groups according as the latter contain (A) only two notes, (B) three

¹ I am indebted to Professor and Mrs. C. G. Seligman for the opportunity of studying the records of these songs; they form not the least interesting of the many valuable results of the Seligman expedition embodied in "The Veddas" (Cambridge University Press, 1911).

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notes, (C) four or five notes. To Group (A) belong twelve of the songs (including three which contain an additional unimportant grace note); to Group (B) also belong twelve songs; of the ten songs belonging

Vedda Song No. 18 (2)¹ (Group A).



Vedda Song No. 42 (Group A)



to Group (C), only one consists of five notes, the others consisting of four.

There is good reason for believing that Groups (A) and (B), the songs of which, as I have just said, consist of two or three notes only, represent the oldest Vedda music. For of ten songs, judged by Professor Seligman on linguistic and ceremonial grounds to be the

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most archaic, four belong to Group (A), four to Group (B), and only two to Group (C); and of eleven songs in which, for similar reasons, foreign or modern influences may be suspected, five belong to Group (C), five to Group (B), and only one to Group (A).

The interval in the songs of Group (A) is never appreciably greater than a whole-tone. In some it measures 125, in others 205, cents; in others again it

Vedda Song No. 31 A (Group B).



Vedda Song No. 37 (Group B).



is midway between—about 165 cents. A resting note is nearly always clearly defined and is invariably the lower of the two tones.

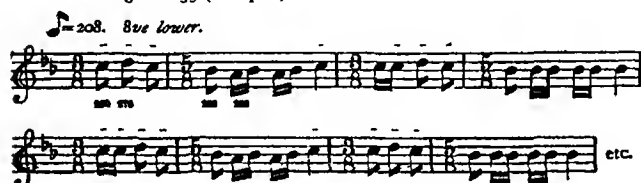
The range of the tune in each of the songs of Group (B) never appreciably exceeds (generally it is less than) our minor third—save in two anomalous songs. In most instances the intervals employed in the songs of this group are approximately a semitone and a whole-tone; in others they are two approximately equal three-quarter tones. When the intervals are of different size, either the upper or the lower may

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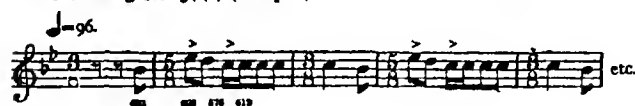
be the larger. But, as in Group (A), the lowest note is always the resting note, the centre of gravity, of the song. Nowhere in Group (B) is an interval appreciably exceeding a whole-tone actually sung.

In the songs of Group (C), the range never exceeds a fourth, save in two late or foreign songs. In some songs the range is only a neutral third, containing two intervals of about 100 cents and one of 165 cents. In

Vedda Song No. 33 (Group C).



Vedda Song No. 34 (1) (Group C).



one song the range is a fourth, divided into three equal intervals of 165 cents each ; in five songs the range is also a fourth, but divided into intervals of about 100, 165, and 230 cents. In all the songs of this group there is a very clear resting point or terminal note, which is almost invariably the lowest tone but one. The interval below this " tonic " is usually the smallest of the three ; it serves frequently to re-introduce the tune beginning on the highest note. In this way the fourth is several times sung in ascent, but it appears to have arisen, like the thirds which occur in the songs

of this group, from the sum of two or more of the smaller intervals.

The special features of the Vedda songs thus are :—

(a) The very small number and range of notes, most songs containing only two or three notes, and the range never exceeding a fifth.

(b) The small size of the intervals sung, the fourth being the largest interval used.

(c) The importance of the lowest tone (or, when more than three tones are used, the tone above the lowest) as the resting point of the tune.

From other investigations of primitive music it is in the highest degree probable that these Vedda songs and the Malu songs of Murray Island represent two of the earliest stages in the development of music with which we are likely to meet among primitive peoples of the present day. As I have already stated, the Malu music is so old that the words accompanying it are now obsolete and almost meaningless. It differs entirely in style from that of the more modern Murray culture, and has quite another origin. The primitiveness of the Vedda music may be gauged from the number of their two-note tunes and from the fact that those Veddas who are least contaminated by outside influences have no musical instruments whatever. The drums, which some of the more sophisticated Veddas occasionally use as an accompaniment to their songs, are borrowed by them from their Sinhalese neighbours.¹ Also in Murray Island, the drum is the

¹ There is good reason for believing that in most respects the Veddas are far from being a very primitive people; but just as

only instrument ever used as an accompaniment to the songs. Flutes, pan-pipes and jew's harps, though occasionally seen, are so seldom used that they cannot be supposed to have had much influence on the development of Malu music.

Both the Malu and the Vedda tunes are based on a series of successive small "tone-distances." In the Malu tunes, as distance is added to distance, the range of tones becomes so wide that the first note necessarily acquires especial prominence; it must be retained in the memory of the singer, in order that sooner or later (with the beginning of a new verse) a return to the initial note may be accomplished. Among the Veddas, on the other hand, the number of steps is so small that this task presents no difficulty. Instead, the second note, or when a third (or fourth) note is added, the third note, becomes all-important. Thus, the *lowest note*, instead of as in Malu music the *highest*, is here the principal note of the tune—the centre of gravity, to which the melody seeks to return and on which it ends. In the Malu songs of Murray Island, we have the frequent use of *portamento*, giving us wide intervals first of the octave, and later of the fourth and fifth. Among the Veddas, on the contrary, the use of octaves and fifths and of *portamento* is unknown; the notes are always hit accurately. Where, as seldom happens, intervals appreciably exceeding a whole-tone are employed by the Veddas, they appear to have arisen

in Ancient Greece music was ill-developed in comparison with the arts of sculpture and drama, so the music of the Veddas may have retained its primitive character, despite the complexities of their social organisation.

merely from the addition of tone-distance to tone-distance.¹ In Murray Island, on the other hand, the wide range of the Malu songs has encouraged the use of octaves. As I have suggested, it is perhaps this use of octaves that has led to the fifth ascents and descents, thus favouring a rudimentary delight in consonances—that is to say, in “intervals” that are based on a relation between tones of somewhat widely different pitch, instead of being determined merely as the sum of a number of smaller “distances.”

Corresponding to the use and avoidance of *portamento* in Murray Island and Ceylon respectively, we find the recitative prominent in the former and rhythm prominent in the latter. If, in consequence of their reliance on tone-distances and their relative neglect of consonant intervals, the Veddas show a more rudimentary grasp of melodic form, their music leads to greater complexities of rhythm than occur in the Malu music of Murray Island. Alternate bars, of three and five beats each, succeed one another; triple as well as quadruple time occurs. Such developments are unknown in Malu music.

The main differences between Malu and Vedda music may be therefore summarised thus :—

MALU	VEDDA
Wide range of tones, often exceeding an octave.	Range is generally limited to one or two whole-tones.
Importance of initial note.	Importance of end-note.

¹ It would be useful to keep the term “tone-distance” (or “distance”) for those intervals which are thus formed, and to reserve the term “interval” for those which have arisen through a feeling for consonance.

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MALU

Frequent use of octaves, fifths and fourths, as consonant intervals. Thirds never occur.

Frequent use of *portamento* for octaves, fifths and fourths.

Diffuse and recitative in character, with use of phrases at different levels of pitch.

VEDDA

Thirds and fourths occasionally used as tone-distances. Fifths and octaves do not occur at all.¹

Intervals are hit without *portamento*.

Concise, rhythmic in character, with a more rudimentary differentiation into phrases.

The Veddas, as we have seen, have reached a stage at which their music consists of three notes (the lowest being the principal note), to which a fourth note, generally about a semitone below, may be added, the highest and lowest of the four notes forming an interval roughly of a third or fourth. In the main, the Veddas think musically in terms of (small) "distances"; whereas the Malu tunes begin to make use also of "intervals," *i.e.*, of octaves, fifths and fourths.

In the Sarawak territory of Borneo, the stress laid on "intervals" is still further developed. Their music appears to have arisen on a basis of the descending fourth. Of the thirteen songs I collected in Borneo, nine contain the cadence \dot{C} B \flat G; that is to say, they are based on a descent through a fourth—to which a higher D is occasionally added.² The note A hardly

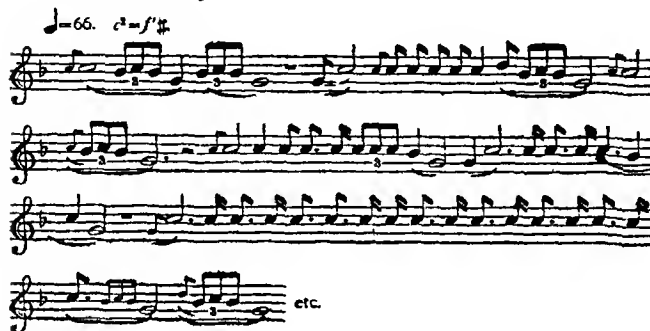
¹ A fifth occurs in one song, but is impure and "dead"; that is to say, it is merely an interval between the end of one phrase and the beginning of the next.

² I use \dot{C} and C to indicate the upper and lower notes of the octave.

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ever occurs. Of these notes \dot{C} is important as the initial note of the song ; G is conspicuous as the final note, while Bb is at times prominent because of its accent. Four of the songs (*cf.* Nos. 3, 10) are made

Sarawak Song No. 37.



Sarawak Song No. 10.



up almost entirely, or entirely, of these tones. In others, however (*e.g.*, Nos. 19, 24), a chorus note is introduced in the form of a drone, an octave below the initial note. Thus, in addition to the intervals \dot{C} -Bb-G, we have the interval G-C, which is filled

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out in the solo with the intermediate notes F and E, the tune being hence based on the pentatonic scale C, B \flat , G, F, E, C.

Sarawak Song No. 19.



Sarawak Song No. 24.



This drone is employed not only in the vocal but also in the instrumental music of Sarawak. The Sarawak *keluri*, consisting of six pipes fitted into a

gourd, the neck of which serves as a mouthpiece, gives the same scale, C, Bb, G, F, E, C, of which the lowest note (and sometimes another) is used as a drone. The *keluri* is occasionally used as an accompaniment to the songs.

The absence of instruments (save the drum) in Vedda and in Malu music, and the fact that when the Veddas and Murray Islanders sing in chorus they always sing in unison, are characteristics which at once distinguish these tunes from those of the Sarawak people. The Vedda and the Malu music seems very clearly to have arisen from the successive addition of small tone-distances. The Malu music, with its insistence on the *initial* note, its use of *portamento*, and its great number of added intervals, early yields the recognition of octave, fifth and fourth consonances; whereas the Vedda music, emphasising the *final* note, and content with one, two, or at most three intervals, never contains an interval exceeding a fourth, which is of little melodic importance and is sung in ascent. Sarawak music appears to show certain characteristics, both of the Malu and of the Vedda music. Like the Malu music, it lays stress on the initial note; like the Vedda music it is at first content with a narrow range of notes—a descending fourth. Through the influence of the drone (an octave below the initial note), a descending fifth is subsequently added and the important tone now becomes the new low octave note.

It seems as if, at an early date in the development of Sarawak music, the large intervals of fourths and fifths received the greatest stress, and that at all events

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the latter were subsequently broken up into smaller intervals.¹ If this interpretation is correct, we have two broad modes of the evolution of scale-notes—(i.) by the synthesis of (small) “distances,” as among the Veddas, (ii.) by the analysis of larger (consonant) “intervals,” as in Sarawak. In the Malu music the first method is more pronounced, but octaves, fifths and fourths seem to have arisen independently and concurrently. In the *Keber* and more modern music of Murray Island (*cf.* “Reports,” *op. cit.*, Vol. IV., pp. 245–247), the filling in of fourths and fifths with smaller intervals is recognisable.

No doubt musical instruments have played an important part in maintaining scales based on equal tone-distances. The Siamese instrumental scale, for example, divides the octave into seven equal steps; the Javan into five equal steps. Our own pianoforte scale of twelve equal semitones—a mode of temperament which was earlier adopted or advocated independently in Indian and in Chinese music also—affords another instance. The ancient Greeks appear to have formed their scale by adding note after note or by joining tetrachord to tetrachord on their instruments. For them distance appears to have been so much more important than interval, that they came to give to each note a different letter-name, ranging from A to Ω ; it was only in early Byzantine music that the note following the note η was given the name of α ,

¹ Thus the tone-distance of (about) 185 cents seems to be a favourite unit, G–F, A–G, \bar{D} –C, \bar{E} – \bar{D} , measuring respectively 186, 187, 178 and 188 cents.

the identity of octave tones being at length recognised by identity of lettering.

Even when a consonant interval formed the starting-point of instrumental calibration (*e.g.*, the fifth based on the shortening of strings or pipes in the ratio of 2 : 3, as in the Pythagorean method and in ancient China¹), nevertheless, the further rigid application of mathematics on these lines led to the production of intervals which are totally at variance with any feeling for consonant intervals.

II

Still earlier, for the foundation of musical enjoyment, must have appeared the recognition of the difference between noise and tone ; the recognition of loudness, pitch, duration, character and quality, as so many directions in which any given sound may be made to vary ; and the memory, however imperfect or short-lasting, for absolute pitch.

Given these beginnings, we can trace the development of melodic and rhythmic phrasing from the utilisation of sounds of different pitch, duration and loudness ; we can trace the development of " meaning " out of the emotions, the feeling-attitudes, and the associations produced by individual sounds and rhythms and by their successive and simultaneous combination.

¹ Cf. also the calibration of pan-pipes (E. von Hornbostel's article in T. Koch-Grunberg's *Zwei Jahre unter den Indianern*, Berlin, 1910, vol. ii., pp. 378-391), where the third partial of one pipe is used as a means of tuning another, and the consequent interval of a fourth is subdivided into two approximately equal tone-distances.

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Thus the beginnings of music may be said to depend on the following eight factors :—¹

- (i.) Discrimination between noises and tones.
- (ii.) Awareness of differences in loudness, pitch, duration, character and quality.
- (iii.) Awareness of absolute pitch.
- (iv.) Appreciation and use of (small) approximately equal tone-distances.
- (v.) Appreciation and use of (larger) consonant intervals and the development of smaller intervals in relation thereto.
- (vi.) Melodic phrasing.
- (vii.) Rhythmic phrasing.
- (viii.) Musical meaning.

The relative independence of some of these "faculties" is shown by the study of such pathological cases as the following.²

An excellent musician was helping in a performance of the "Flying Dutchman" at the local opera, when suddenly, at the end of the ballad in the second act, the music became for him a series of most unpleasant sounds. It was not a matter of mere dissonance, but of sheer intolerable noise. He left the theatre in tears. On the following day he happened to hear a barrel organ in the street, but the tune seemed to him a meaningless noise. For the next five years this change persisted. He could appreciate rhythm in a piece of dance music, but he heard the dance tune merely as a

¹ The numbers (i-viii) will be repeated in the next few pages, when the corresponding factors are again referred to.

² Cf. F. Alt, "Ueber Melodientaubheit und musikalisches Falschhören," Leipzig, 1906, pp. 14 ff.

toneless row. Though he could read music from the score as well as ever, the tunes he heard were absolutely meaningless, and he therefore no longer played on the piano. In this case, then, a sudden loss of the ability to distinguish tones from noises (i.) occurred, while the sense of rhythm (vii.) was still preserved.

In another case, an old man suddenly lost comprehension both of speech and music, but he retained the ability to hear noises and tones. His intelligence and memory were unimpaired. If addressed, he heard that he was being spoken to, but answered "I hear well, I hear everything, but it is all a jumble." He heard all noises, he could distinguish the house bell from other bells. He could recognise the voices of unseen people and identify unseen instruments by the quality of their sounds. He could correctly distinguish between high and low tones. But when his daughter played a selection from a quite familiar opera, he failed to recognise what was being played. In this case the discrimination between tones and noises (i.) and the awareness of differences in loudness, pitch, duration, character and quality of sounds (ii.) were preserved, but musical meaning (viii.) was entirely lost. He was afflicted not only with "word-deafness," but, as occurs in the unmusical among us, also with "tune-deafness." The individual tones were still audible, but there arose a total incapacity to combine them into a "form," there was a loss of what the Germans would call *Musikgestaltqualität*.

The importance, for music, of the awareness of absolute pitch (iii.) has perhaps not been hitherto sufficiently recognised. In Europe we generally reserve

the term "awareness of absolute pitch" to the ability of trained musicians to give a name to any tone sounded, or to produce the corresponding tone when the name of a tone is given. But this ability is obviously based on a more primitive form of awareness of absolute pitch which arose long before names began to be applied to tones of different pitch. We have seen how in Murray Island the remembrance of the initial note dictates the octave fall, enabling the singer to recommence his song time after time at (approximately) constant pitch. Such memory for the absolute pitch of a single note must be the basis of tonality in music and of the use of (consonant) intervals in place of (small) tone-distances.

On general grounds the sense of absolute pitch is probably strongly developed in primitive peoples. Parrots, taught a given tune, will always repeat it in the same absolute pitch, and this is said to be largely true also for young children.¹ Such instruments as the pan-pipes and the harmonica, which have each a very wide range of distribution—the former occurring in Melanesia and Brazil (including ancient Peru) and the latter in Burma and Africa—have been shown to preserve the same absolute pitch despite their wide wanderings.² It is probable that the sense of absolute pitch is in part responsible for such conservatism.

That the appreciation of tone-distances (iv.) is distinct from the appreciation of intervals (v.) is borne out by the investigations of Révész³ on his friend Paul

¹ Abraham, "Sammelbd. d. internat. Musikgesellschaft," 1901, vol. iii., p. 69.

² von Hornbostel, "Ztsch. f. Ethnol.," 1911, pp. 601 ff.

³ "Zur Grundlegung der Tonpsychologie," Leipzig, 1913.

von Liebermann, who, being highly musical and gifted with awareness of absolute pitch, proved an exceptionally suitable subject for inquiry. Owing to an ear affection, the note C_1 was not heard normally,¹ so that when C_0 and C_1 were given successively, the *interval* was judged by the subject to be a fourth; that is to say, C gave him the impression of a G. Nevertheless he insisted that the *distance* between C_0 and C_1 seemed to be much greater than a fourth, probably a major seventh or an octave. Thus his appreciation of "interval" was altered while his appreciation of "tone-distance" remained.

That the appreciation of intervals given by *successive* notes is independent of the fusion effects produced by *simultaneous* notes is also shown by this subject.² His ear trouble caused him to hear all tones between g^2 and $d^{\sharp 4}$ as a g^{\sharp} . Hence when two such tones as e^2 , b^2 were given successively, the subject judged the interval as a minor third ($e-g^{\sharp}$); but when they were sounded simultaneously he at once judged it correctly as a fifth ($e-b$). In other words, while the grade and character of fusion (simultaneous octave tones fusing differently from fifths, fifths fusing differently from fourths, fourths from thirds, etc.) allowed of the correct identification of intervals between *simultaneous* tones, his appreciation of the intervals between *successive* tones was lost and hence depended on quite another basis.

¹ The middle c of the pianoforte is written c^1 . Successive octaves above it are written as c^2 , c^3 , c^4 , etc., those below are written as c_0 , C_0 , C_1 , etc.

² The degree to which two simultaneous tones fuse with one another is in the order of their recognised consonance. Thus octave tones fuse more perfectly together than fifths, fifths than fourths, fourths than thirds or sixths.

It has been supposed that primitive people could only have employed such successive intervals as octaves, fifths and fourths after they had actually heard the tones sounded simultaneously (*i.e.*, *consonantes*). But the Murray Island people always sang in unison ; even if, as Stumpf has suggested in such cases, they occasionally failed to keep strict time together, it is unlikely from the nature of the more primitive examples of Malu music that chance accords of fifths and fourths would ever have occurred. Indeed I do not think that, after a careful study of the Malu music, anyone can doubt that the octave fifth and fourth intervals, therein employed, have developed quite independently of the fusion effects produced by such accords. It seems certain that the use of these intervals depends directly on the pleasure derived from the relationship between the two *consecutive* tones, and not on the fusion effects obtained by hearing the tones *simultaneously*. As I have already insisted, the memory for absolute pitch has played an important part in furthering this relationship ; for the intervals are employed under the precise conditions most unfavourable for the preservation of tone relationship, *e.g.*, between the ends of almost chromatic passages, and between the ends of a slow *portamento* glide.

III

A general study of the cases in which, owing to cerebral lesion, musical appreciation is lost shows that such disturbances rarely occur apart from simultaneous disturbances in word-language. From this fact, and from the close topographical relation of the cortical

structures involved in speech and music, we may be disposed to conclude that the beginnings of music have been derived from speech. It would be safer, however, to conclude that both have been evolved from a mechanism designed for the vocal "expression of meaning." Psychologists now recognise that words are not necessary for the awareness of meaning ; they are indeed but an imperfect means of formulating and conveying it. Further, musicians now recognise that music has a meaning of its own, which is spoilt, or at least imperfectly rendered, by translation into words ; indeed, " meaning," in the sense of what can be conveyed in *verbal* language, is by no means essential for musical enjoyment. At most what is common to two or more individuals listening to the same music is a common attitude, a common mood, or a common emotion. Even the most modern " programme music " requires a printed programme in order that the audience may interpret it in the precise " objective " manner desired by the composer.

In their fully-developed states, speech and music present very decided contrasts. Speech has a precision and a utilitarian character, opposed to the vaguer artistic influence of music. Speech serves for the communication primarily of cognitive experiences (what we *know*), whereas music primarily communicates affective experiences (what we *feel*). Music employs definite intervals precisely hit by the executant, and regular rhythmic periods ; speech is relatively independent of pitch. What changes there are in the pitch of speech occur as a rule continuously and without uniformity ; while its " rhythm " (in prose) is irregular.

The most primitive music and the most primitive speech which are available for examination at the present day are perfectly distinct from each other. Nevertheless traces, perhaps, may be detected of their earlier approach to one another. In the most primitive music the intervals are only imperfectly defined ; the slow *portamento* sung between widely different notes may be reminiscent of a long wail. The fact that in certain languages the same word may have different meanings according to the way in which it is intoned also brings speech and music more closely together. But even if it be true that both speech and music have been developed from a common mode of expression, it is clear that this common mode cannot properly be termed speech or music.

The prime function of musical expression is then to communicate certain emotions or feelings. The regard for beauty *per se* in Art only begins at a much later stage of mental development. For primitive peoples, and even for the masses in civilised countries, beauty and pleasure are practically synonymous. What pleasant purpose, then, has music served ? Some have believed that music has developed from its employment for the facilitation of work or as an accompaniment of the dance. It is true that most primitive peoples find great delight in rhythmical expression, but an examination of their tunes (cf. the Malu songs) shows that the use of definite rhythm is by no means universal or necessary. Others have believed that music has evolved from its serviceableness as a means of sexual attraction. But it has yet to be shown that even in birds this is the *origin* of their song.

Certainly the sounds emitted by animals serve to communicate other feelings than those of love, *e.g.*, pain, alarm, contentment and anger. And so doubtless in ourselves music has arisen from efforts to express not merely sexual love, but such general feelings as joy, sorrow, tenderness and ecstasy.

A series of experiments, which I published¹ after this chapter was written, shows very clearly how differently music appeals to different individuals at the present day. Some when they hear music translate it into words, others are led by association to think of similar sounds in nature or elsewhere ; in others again the emotional element predominates ; while yet in others there is a strong tendency to movement. To such individual differences, I believe, are to be attributed the rival hypotheses of different writers, which variously ascribe the beginnings of music to speech or to the imitation of the sounds of nature, or which lay stress on the importance of sex or of rhythm.

¹ "Individual Differences in Listening to Music," *Brit J. of Psychol.*, 1922, vol. xiii., pp. 52-71.

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